SystemCORP
Embedded Technology Pty Ltd

WEBCAN Substation Control and Monitoring System

WebCAN Designer Studio User & Reference Manual

This PDF Document contains internal hyperlinks for ease of navigation.
For example, click on any item listed in the Table of Contents to go to that page.

- *WebCAN Designer Studio General Description*
- *WebCAN Designer Studio Step-by-step User Guide*
- *System Diagnostic User Guide*
- *WebCAN Designer Studio Reference*
- *Trouble Shooting*

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1 Introduction

WebCAN Designer is Windows® based software used for configuration, diagnostics and troubleshooting of a WebCAN Substation Control and Monitoring System. Configurable properties of system modules are specified in individual Electronic Data Sheets (EDS). Each system module is represented as an object. With a simple drag and drop mechanism, a complex control system can easily and quickly be created and configured. During the configuration process, all values and settings are automatically passed through a consistency and error check to provide system integrity. Furthermore, each object added or removed is recorded in the system log for future reference.

Moving away from the traditional serial port configuration, WebCAN Designer uses a much faster communication medium, fast Ethernet. With the support of Ethernet, WebCAN Designer can administer the substation control systems remotely without being physically in the substation. Furthermore, WebCAN Designer pioneered the substation configuration and diagnostics with USB connection as an alternative to the standard Ethernet link.

The WebCAN Designer not only configures the substation control system, but also provides logging of system activities, diagnostic of system status and substitutions of field IO channels.

In a substation control system, security is a fundamental concern. The WebCAN Designer integrates user profiles for different groups according to technical competence and access rights. Tasks and actions performed by individual users are logged for review and audit purposes. In addition, the WebCAN Designer projects are compressed and encrypted to prevent unauthorized modifications.

Minimum System Requirements:

Operating system	Microsoft Windows® System XP, Service Pack 2 or higher Windows 2000 not supported
Processor	Intel Core 2 Duo® 1.8 GHz or AMD AM2 x2 3800+
System Memory	1024 MB or more
Graphics	1280x1024 resolution
Hard disk space	5 GB
Input device	Keyboard+Two-button scroll-wheel mouse

Communication:
10/100 Ethernet connection
Rs232 serial port
Optional USB port

2 Scope

This document is divided into the following major sections:

- General Description that includes file descriptions and a Quick Walk-thru 3-Page Tour
- WebCAN Designer Studio Step-by-step including Creating a New System Design and an object (the software model of the hardware modules) detailed description
- System Diagnostics
- Reference Section – Item by item toolbar icon, pull-down menu, and right-mouse click pop-up menu item
- Trouble Shooting – including an Alert Message list

Specific Client and Server protocols are beyond the scope of this document. For DNP3, GPRS Gateway, IEC 61850 and others see the appropriate documents.

For hardware configuration and other applications used with WebCAN Designer Studio see the appropriate documents listed on the following page.

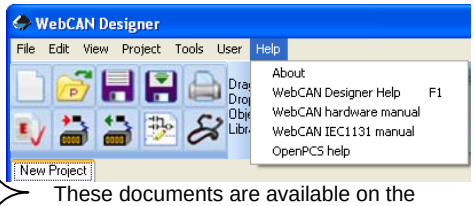
3 Overview

3.1 Document Reference

[1] Document Title: IEC61131 PLC User Manual
Revision: Version 1.00 English
Source: SystemCORP Embedded Technology Pty Ltd

[2] Document Title: Infoteam OpenPCS Programming System
Revision: Version 4.1 English
Source: InfoTeam

[3] Document Title: Hardware Description and User Manual
Revision: Version 1.0 English
Source: SystemCORP Embedded Technology Pty Ltd



These documents are available on the "Help" pull-down menu.

3.2 List of Abbreviations

ACM	=	Alternate Current Measurement Module
ACT	=	Application Configuration Table
AIM	=	Analogue Input Module
AVA	=	Automatic Voltage Adjust
BCD	=	Binary Coded Decimal
BCU	=	Bay Control Unit
CAN	=	Controller Area Network
CFE	=	Communications Front End
DA	=	Distribution Automation
DDI	=	Double Digital Input
DI	=	Digital Input
DIM	=	Digital Input module
FTP	=	File Transfer Protocol
HCM	=	High Current digital output Module
I/O	=	Input/Output
LCM	=	Low Current digital output Module
ORT	=	Object Reference Table
PLC	=	Programmable Logic Controller
RTU	=	Remote Terminal Unit
SCADA	=	Supervisory Control and Data Acquisition
SDI	=	Single Digital Input
SOE	=	Sequence of Events
SCS	=	Substation Control System

3.3 Motivation And Purpose

WebCAN Designer is a robust and flexible package for easy system configuration of the WebCAN Substation control and monitoring system.

The CFE communication frontend processors of the WebCAN system contain the distributed database of the WebCAN Substation control and monitoring system, which provide support for protocol conversion, event handling and processes control.

The database requires the information of all configured data points in order to correctly and efficiently route the information

The purpose of this document is to allow any user to configure the package and to design, download and test the WebCAN Substation control and monitoring system as required for their application.

3.4 Document Guidelines

The intended audience for this document are the Users of a WEBCAN Designer who engineer and design the Substation control and monitoring system. It aims at assisting them in setting up and configuring the base software as well as testing and diagnose the designated system.

An understanding of the hardware (refer to [3] Hardware Description and User Manual) is a requirement when using the WEBCAN Designer software.

4 General Description

The WebCAN Substation Control and Monitoring System hardware (for details refer to [3]) can easily be setup in the user friendly “WebCAN Designer Studio” configuration application. This user manual explains setting up software applications for the WebCAN Substation Control and Monitoring system.

The main tasks of a substation control system or of a simple Remote Terminal Unit (RTU), involve data acquisition of substation data, providing data for fault recording and power quality. Modern systems also provide local substation automation functionality and protection integration. Therefore, the configuration of such systems is a mission critical task where mistakes might result in major failures in an electrical grid. The traditional way of configuring the system is to use text editors to write the configuration script before it is downloaded to the system. This method not only involves many manual operation steps, such as writing the scripts, encoding the files and downloading the configurations into the controller, but also prone to have errors due to lack of automated error checking and validation mechanism. For this reason, WebCAN Designer Studio is required for a state of the art substation control system.

WebCAN Designer Studio software provides a GUI (Graphic User Interface) driven design platform that directly communicates to the system to configure. This method gives the designers the option to create their system with drag and drop of the objects. Moreover, the resulting configuration can be further passed through error checking algorithms for detection of common mistakes and inconsistency. In addition, it can only communicate to the specific CFE, BCU, or DA RTU hardware and any newly added modules to the system require a change of the configuration. Most importantly, the security of the system insured so unauthorized access to a control system is eliminated. This includes employing the use of a user account database for different access rights for different personnel. Also, it is crucial to provide software protection to the program, so that the program cannot be executed outside the designated machine, and decrease the vulnerability of being reverse engineered. As a result, WebCAN Designer Studio conforms to standards specified by CiA (CAN in Automation) and includes CANopen (Open standard for controller area network), EDS (*Electronic Data Sheet*) and DCF (*Device Configuration File*), and provide the highest security features for the industry. The software should also open the door to the wide range of hardware to be added later without upgrading the software.

The Software/Hardware Overview Diagram on the following page shows how the software is configured within the WebCAN Substation Control and Monitoring System hardware.

On the WebCAN Substation rack, the Communication Front End (CFE) hardware modules each contain an embedded processor with a real-time operating system integrating all peripheral interfaces such as serial ports, USB CAN field bus interfaces, Ethernet ports and Flash/RAM memory on one hybrid chip. An SD flash card holds all application software and non-volatile data. The Real-time multi-tasking operating system allows a maximum of 4 CFE-20 modules to form a parallel processing system via Ethernet with various software applications distributed throughout the system. The database information is shared among all the CFE’s. The embedded software controls and manages:

- System database
- Module time keeping and time synchronization arbitration
- User application and software tasks
- Local field IO modules
- System information distribution
- Built-in programmable logic control applications
- Communication Protocols (e.g. DNP3, GPRS Gateway, IEC 61850)
- Bay Control Units (BCU)

Process control or computer systems with different operating systems can be added to the system and easily linked to internal software applications communications via Ethernet.

The following figures show an overview of the internal CFE hardware/software structure and where the various system configurations: CFEs in Remote Terminal Units (RTU), System Control Systems with Bay Control Units (BCU), and Distribution Automation Systems (DAS).

Software/Hardware CFE Internal Structure for Remote Terminal Units (RTU), System Control Systems with Bay Control Units (BCU), and Distribution Automation Systems (DAS):

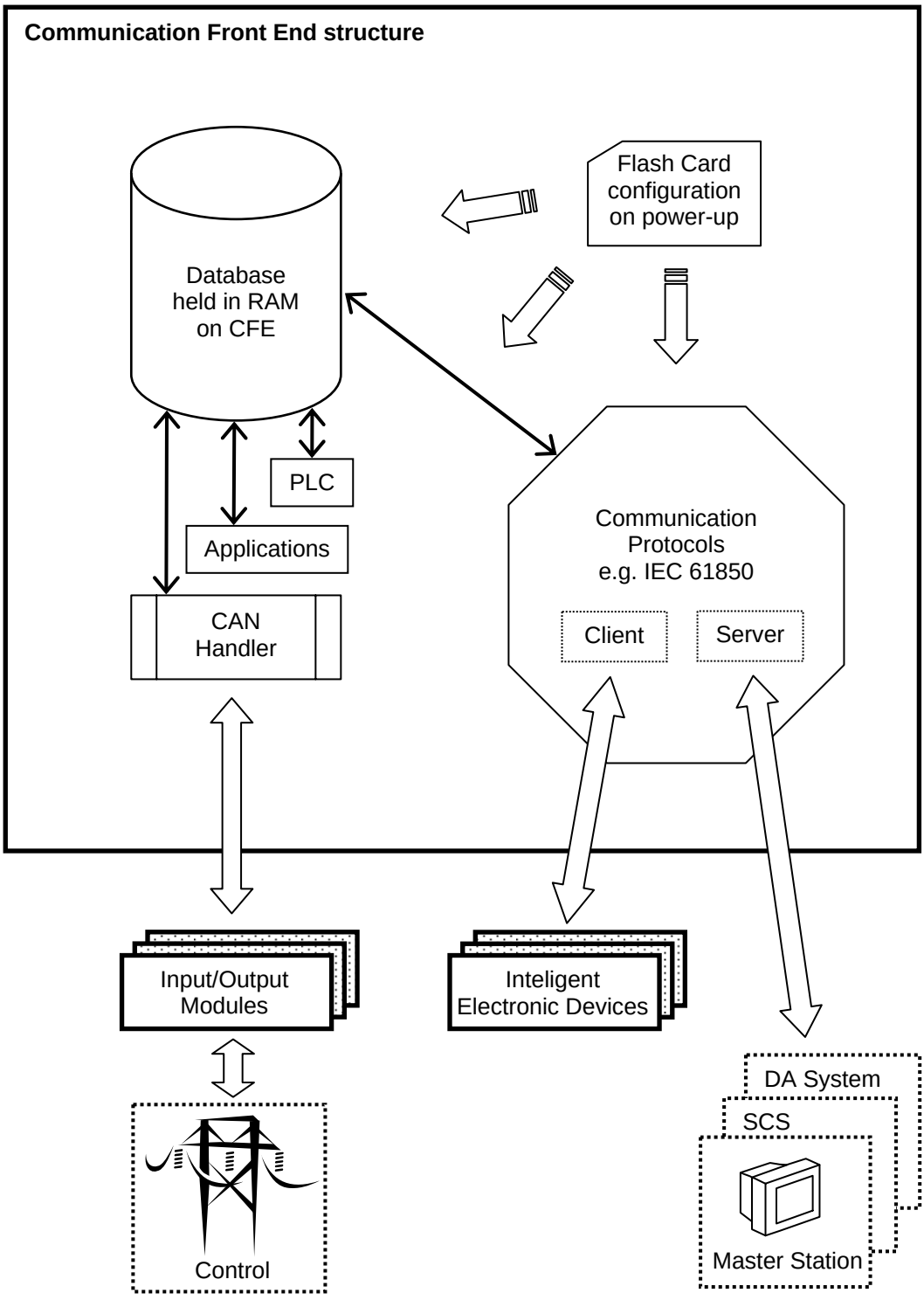
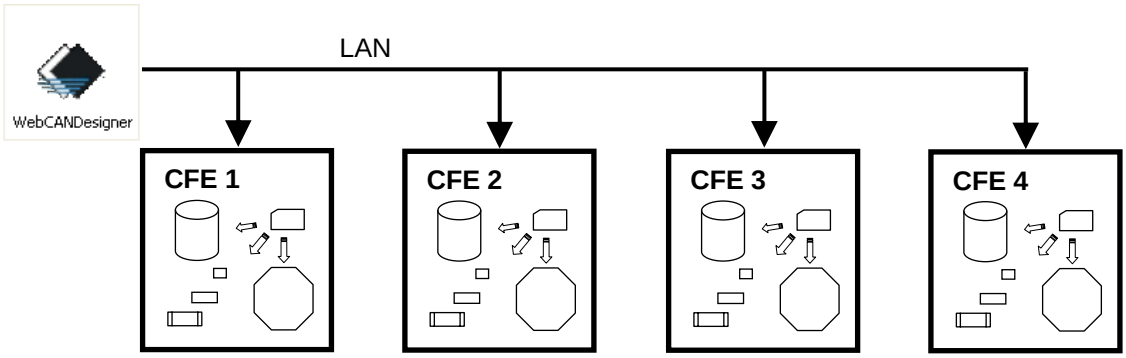


Figure 4-1 – Overview of the WebCAN Communication Front End Structure



Up to 4 CFE-20 modules can be used in one RTU rack. See Hardware Description and User Manual for details.

Figure 4-2 – Overview or the Remote Terminal Unit (RTU) Structure

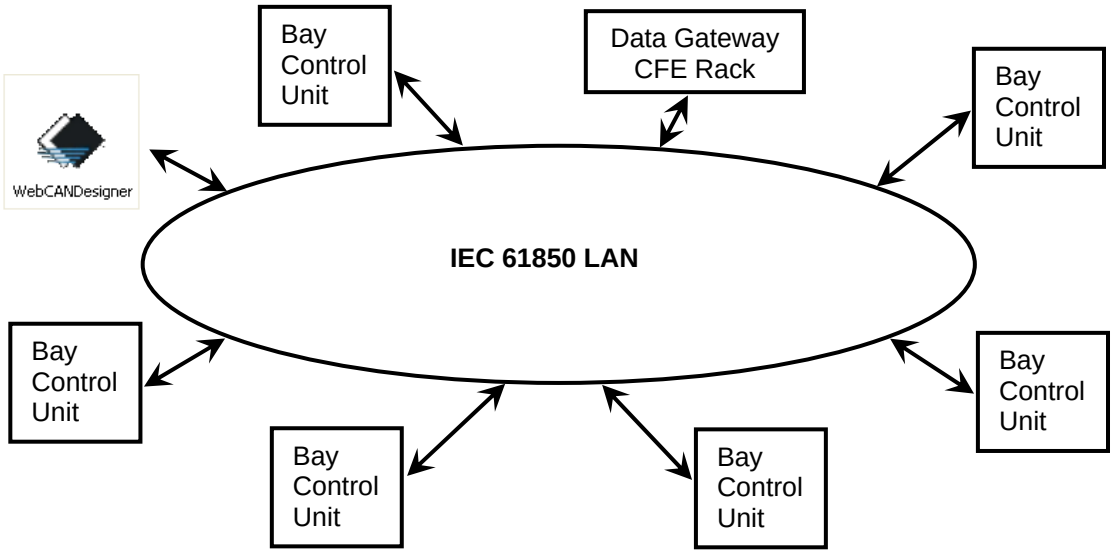


Figure 4-3 – Overview of the Substation Control Structure with Bay Control Units (BCU)

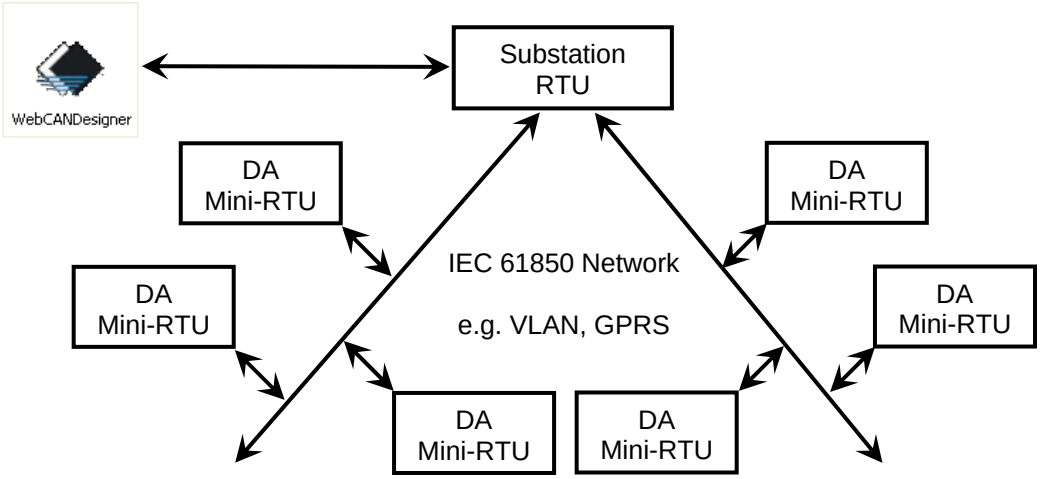
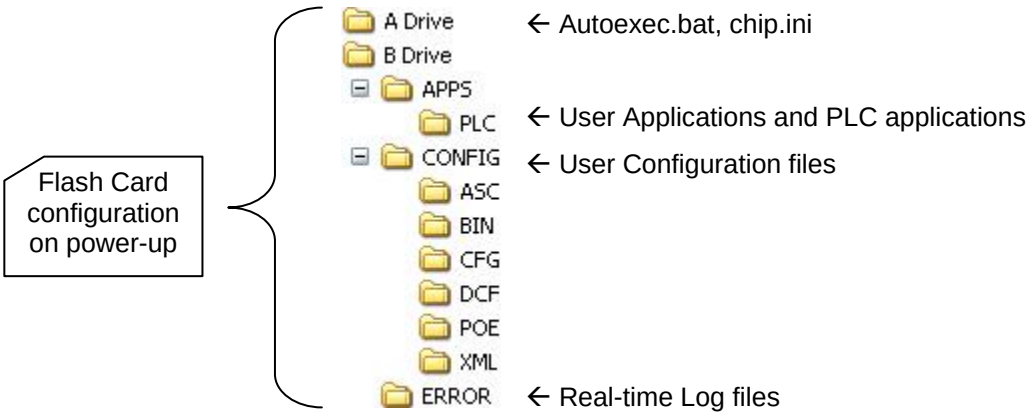


Figure 4-4 – Overview of the Distribution Automation System (DAS):

4.1 CFE File Configuration

4.1.1 Location of the CFE Files

All of the initialization, configuration, and user applications are stored into two partitions, A: and B: partitions. The real-time operating system CFE settings are stored in A drive. The user applications and configuration created in WebCAN Designer Studio are stored in B drive, which is the Secure Digital (SD) flash disk card.



File Name	Functions
AUTOEXEC.BAT	Batch file for all startup programs
CHIP.INI	Settings file for the CFE (e.g. CFE name, IP address)
EXTSD.EXE	SD card driver (required to access B drive)
ETH1.EXE	Required for Ethernet Port 2

Table 4-1 – CFE A: Drive Contents and their Functions

File Name	Functions
APPS.BAT	Batch file that controls the startup of the applications
CANHDLR.EXE	CANOpen handler
DBSYSTEM.EXE	Database system
DIAGNOST.EXE	Diagnostic application
PLCDBHDL.EXE	PLC to database interface
PLCSYSTEM.EXE	PLC System
PROTOCOL Executables	Protocol executable files (e.g. 61850)

Table 4-2 – CFE B:\APPS Folder Drive Contents and their Functions

File Name	Functions
CurrentProject.WDS	The project file that is currently active in the CFE
ASC (directory)	Ascii configuration files (for other Applications or Protocols)
BIN (directory)	Binary configuration files (ORT)
CFG (directory)	CFG configuration files (System, CFE and some applications)
DCF (directory)	DCF configuration files (IO modules)
POE (directory)	POE configuration files (PLC)
XML (directory)	XML configuration files (61850 protocol)

Table 4-3 – CFE B:\CONFIG Folder Contents and their Functions

4.2 WDS Demonstration Version

There are 2 versions of the WebCAN Designer Studio: 1) the purchased released production version, and 2) the free demonstration version.

4.2.1 Limitations of the Demonstration Version

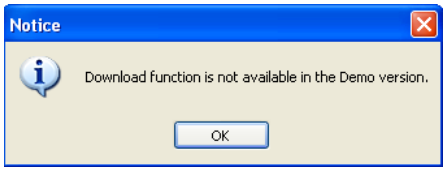
This document describes the production version of WebCAN Designer Studio. The demonstration version has the following limitations:

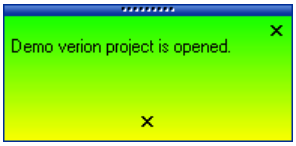
- User Administration – The demonstration version has no password security.
- Download – The demonstration version can not download projects into any RTU, BCU, or DA hardware.
- Manage Tools – The demonstration version can not Manage or change added software tools.
- Diagnostics – The demonstration version can not communicate, monitor, or run diagnostics on any RTU, BCU, or DA hardware.
- Does not contain OpenPCS IEC61131 software.
- All the associated pull-down and pop-up menus associated with the above list are disabled.

4.2.2 Saved Demonstration Projects may be Upward Compatible

WebCAN Designer Studio is protected against disassembly and reverse engineering. Project files have a 64-digit encryption key used and are fully compressed.

WebCAN Designer Studio demonstration versions can be used to create and save projects. For security purposes, the demonstration version cannot download the project to the RTU hardware. However, these project files are upward compatible to the fully-functional version. The Administrator user can read the demonstration-created project and save the project for the fully-function version.





Once the Administrator has opened and saved the project created from the demonstration version, it fully compatible with the RTU hardware.

As a security measure, projects created by the fully-functional version are not downward compatible to the demonstration version. Attempting to access a secured project with the demonstration version will show the message:

For more information on using User Administration, see the user guide section below and the User Administration reference section.

Note: Please check with SystemCORP Pty Ltd that the demonstration version is current and compatible with current production software if you wish to use it for project creation. The WDS versions and internal application structure is subject to change without prior notice and projects created with older demonstration versions may NOT be compatible. Demonstration version created projects should not be construed as a commitment by SystemCORP Pty Ltd to be fully compatible with current production versions. SystemCORP Pty Ltd does not assume responsibility for any errors with an older demonstration version.

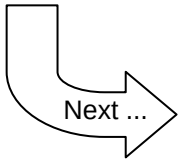
The following section will offer a quick tour of the WebCAN Designer Studio software application introducing terms, naming conventions, and the general application development environment. Greater detail of the development environment is contained in later user and reference sections.

4.3 WebCAN Designer Studio Quick Walk-thru 3-Page Tour

When developing an application to run on the WebCAN Substation Control and Monitoring system hardware [reference 3], the "WebCAN Designer" Studio Windows-based application tool is used for configuration:

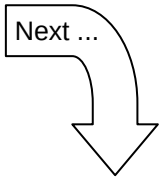
WebCAN Designer (.exe) application creates project (*.WDS) files. The project file contains all the information and data require for building the application that is downloaded to the WebCAN Substation Control and Monitoring system hardware.

← WebCANDesigner.exe Windows-based application – ***Open (Launch) the executable***

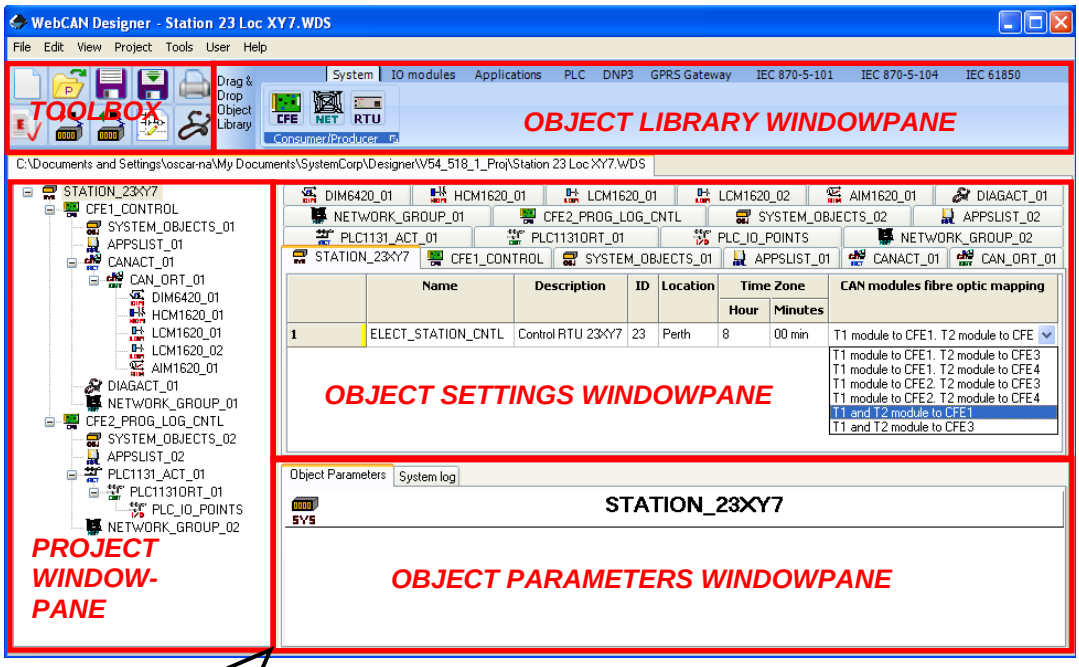


Enter appropriate Username and Password into the Secure Login screen.

Your System Administrator assigns Usernames and passwords.



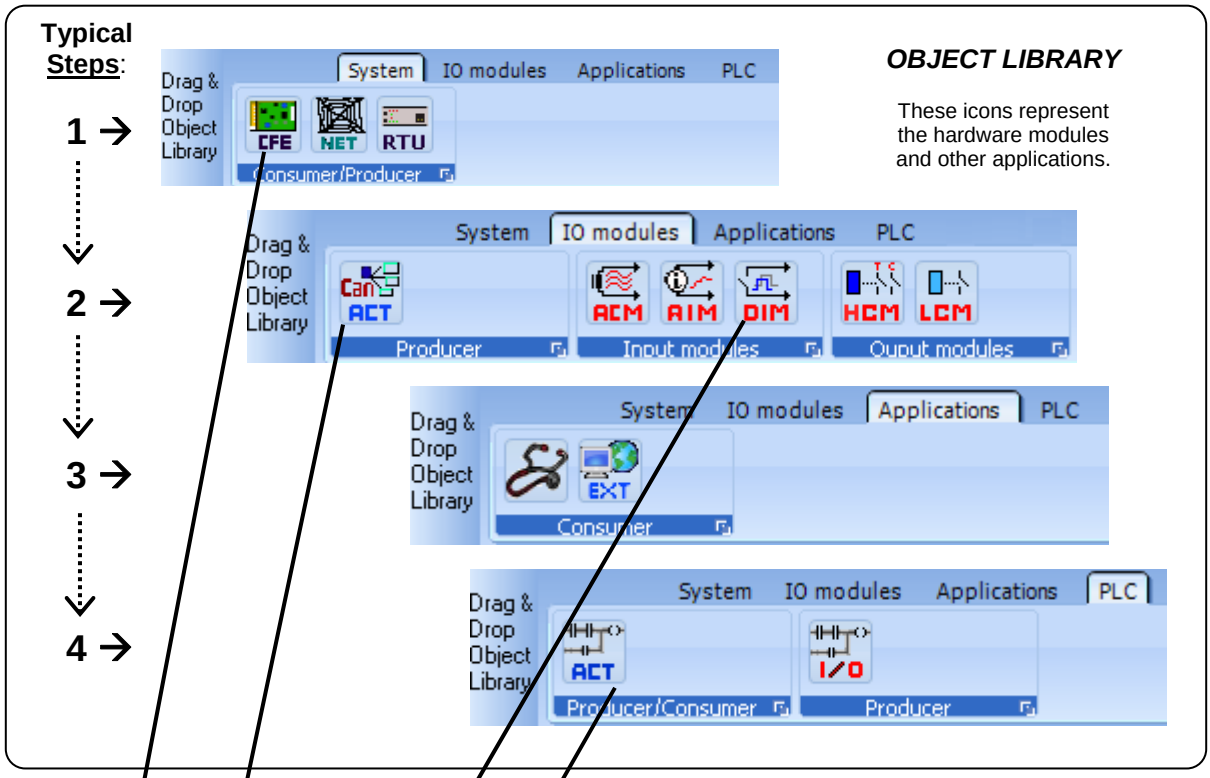
The WDS development environment window appears:

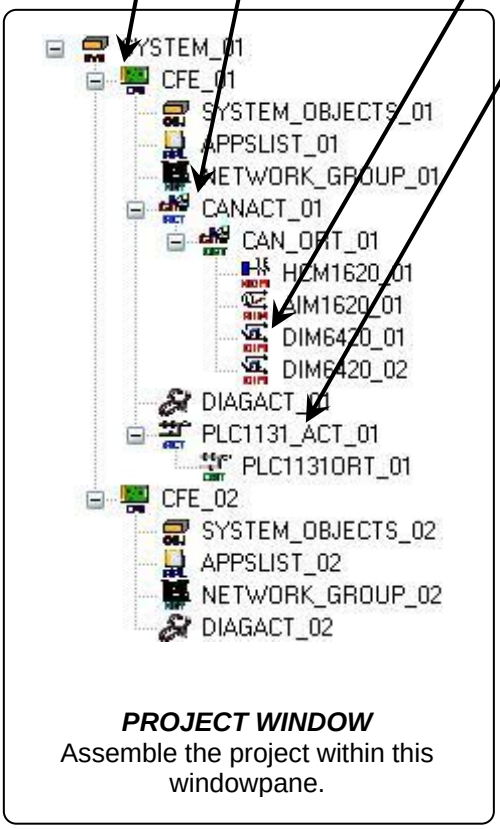


TOOLBAR ← Basic functions
OBJECT LIBRARY ← Modules in the RTU
PROJECT WINDOW ← Graphic design of the project tree
OBJECT SETTINGS WINDOW ← Specific module settings
OBJECT PARAMETERS WINDOW ← Parameters for module settings

Create your project by using objects from the OBJECT LIBRARY, assembling in PROJECT WINDOW; adjust settings in the OBJECT SETTINGS and PARAMETERS WINDOW.

The ***OBJECT LIBRARY*** contains numerous software objects that are equivalent to the hardware modules and represent other applications. Select the appropriate tab to drag and drop in the ***PROJECT WINDOW***. All the essential tabs (System, IO modules, Applications, and PLC) containing the appropriate objects are show below. Additional tabs and objects are also available depending upon the protocols that are installed (e.g. IEC61850, DNP3, GPRS Gateway).





PROJECT WINDOW
Assemble the project within this windowpane.

Click-drag & drop objects from the ***OBJECT WINDOW*** to the ***PROJECT WINDOW***

Next ...

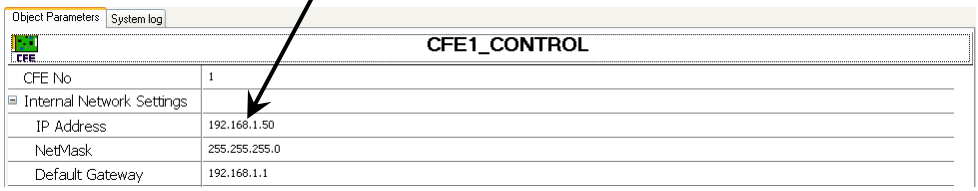
OBJECTS (icons of HW modules and applications):

CFE	→ Communications Front End
RTU	→ Miniature Remote Terminal Unit
NET	→ Network Group of the 4 CFEs on the rack
CanACT	→ Controller Area Network Application Configuration Table for the IO Modules:
AIM	→ Analog DC Input Module
DIM	→ Digital Input Module
ACM	→ Analog AC (Alternating Current) Input Module
HCM	→ High Current Input Module
LCM	→ Low Current Input Module
Diagnostic	→ Stethoscope icon is the Diagnostic Application
EXT	→ External Applications
ACT	→ PLC and other Applications Configuration Table
I/O	→ PLC Input/Output reference variables

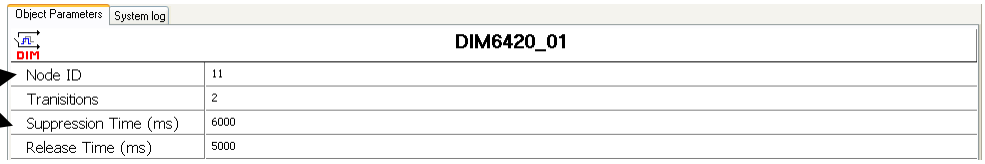
Select Objects and adjust appropriate ***OBJECT SETTINGS*** *and* ***PARAMETERS WINDOW***

Next ...

Each Object requires specific settings. For example, each CFE, BCU, and DA RTU requires an IP Address.



For another example, each I/O modules require specific parameters such as …



Lastly ...

Select the ***TOOLBAR*** icon to save, compile and download, then diagnose the system:

Create a new WebCAN project.

Open a WebCAN project from disk.

Save the current WebCAN project.

Copy or ‘save as’ the current WebCAN project into different name (backup).

Print out the report for the completed WebCAN Designer project.

Compile (check design rules of) the current WebCAN project.

Start OpenPCS application from the current WebCAN project.

Compile and Download the current WebCAN project into the system.

Open the WebCAN project from actual CFE in the RTU, BCU, or DA RTU hardware.

Start system diagnostic for the current WebCAN project.

Congratulations! That’s all it takes to control and configure a SystemCORP substation monitoring and control system.

For a more detailed walk-through example, in the next section see the Security & User Administration as well as the Create a New System Design section.

5 WebCAN Designer Studio User Guide

This section walks through the creation of a RTU project from beginning to end step-by-step:

5.1. Security & User Administration – How to create various users with different security settings.
5.2. Assembling and Editing a WebCAN Designer Studio Project – How to assemble each module.
5.3. Compile and Download to RTU, BCU, or DA RTU – How to load the project into the hardware.
5.4. Printing and Project Reports – Creating – How to generate configuration reports and print them.
5.5. WebCAN Designer Studio Tools – How to add and use other tools with WDS.

5.1 Security & User Administration

5.1.1 SystemCORP Administrator

When WebCAN Designer Studio is installed, the only user is the "SystemCorp" user. The SystemCorp user has full administration rights. The SystemCorp user has the ability to create other users. Login as SystemCorp user:

The WebCAN Designer Studio default system Administrator User name is "SystemCorp" and the default password is "SystemCorp". User names and passwords are case sensitive and allow numerical as well as special characters.

Figure 5-1 – Login screen for WebCAN Designer Studio

For example, John Smith may be the person assigned to be the administrator for use WebCAN Designer Studio. John's first task would be to assign himself a unique password. Next, he would add, edit, and remove users.

1) Select the **User** > **User Administration** menu item:

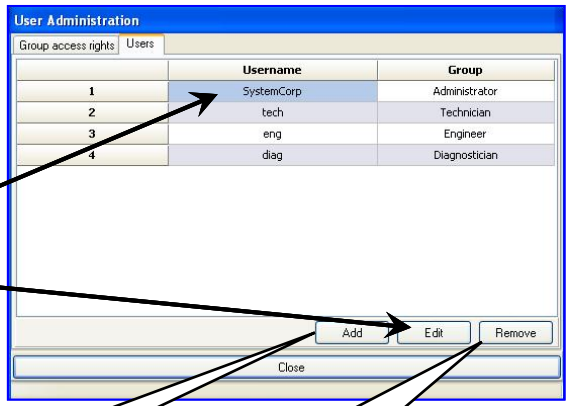
2) The User Administration dialog box will appear. Select **SystemCorp** User.

3) To change user passwords, click on the **Edit** button.

4) On the User settings dialog box enter or change the Username and/or password.

5) Confirm password.

6) Click on **OK** button.



✓ Click here to add a user

✓ Click here to remove a user

7) Add other users as required (e.g. tech, eng, diag).

To continue with this example, John Smith may continue with above procedure to create new users by using the Add button, entering new users (e.g. create “JSmith” user as an “Engineer”). In the User settings dialog box enter the Username, Password, and User Group. Note that both username and password are case sensitive.

There are 4 User types of users (or Groups) with default settings:

- **Administrator** – has full access and cannot be changed.
- **Engineer** – Similar to Administrator but cannot add or edit users.
- **Technician** – Can only edit, save, print, and run diagnostics.
- **Diagnostician** – Can only open, print, and run diagnostics.

5.1.2 User Access

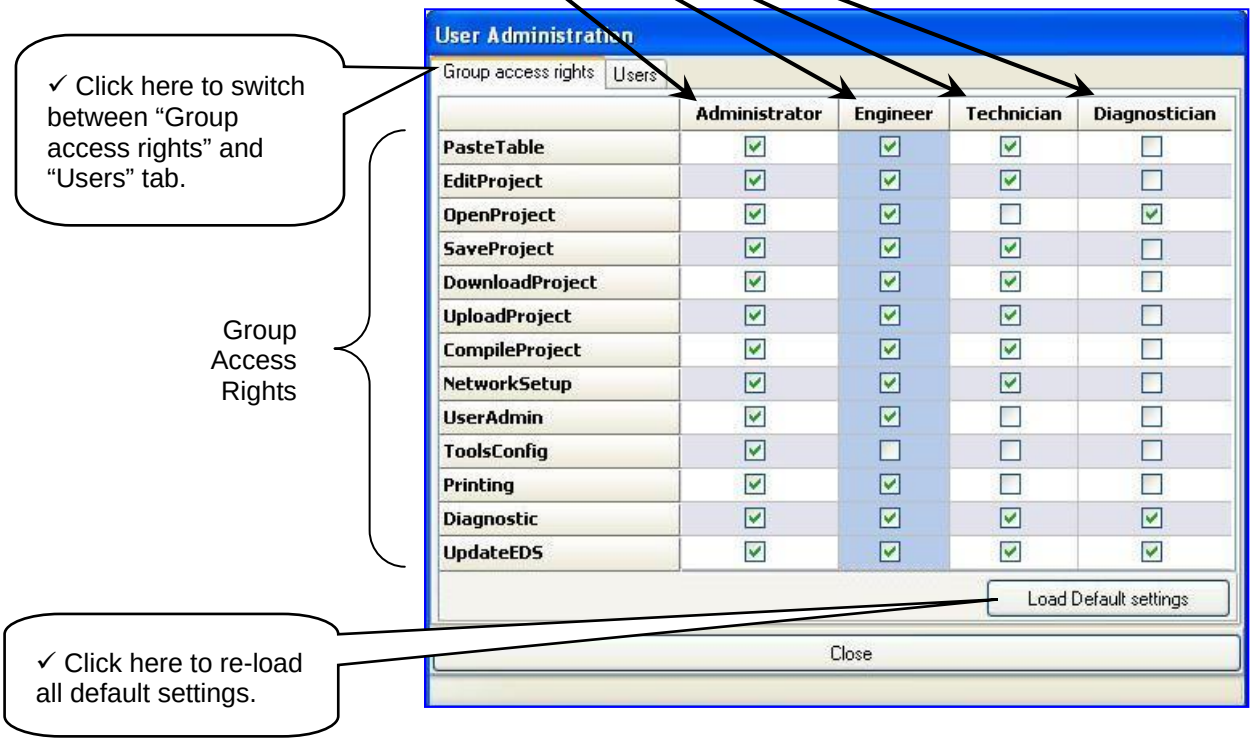


Figure 5-2 – User Administration default “Group Access Rights” settings

By default, only the Administrator type of user can change passwords, add, remove, edit the users, or the group access rights table (i.e. “UserAdmin” “Group access rights” tick-box is ticked ☑). The Administrator user group cannot be changed (i.e. “Group access rights” tick-boxes cannot be un-ticked ☐ for the Administrator user group). This prevents an Administrator from locking themselves out of WebCAN Designer Studio.

See the pull-down menu User Administration reference section for a complete description for each “Group Access Rights” ☑ tick item.

5.2 Assembling and Editing a WebCAN Designer Studio Project

Logged into WebCAN Designer Studio as a user with full access rights for to creating, building, and saving a project, the following screen (less the red lines and text for description in the document) will be presented:

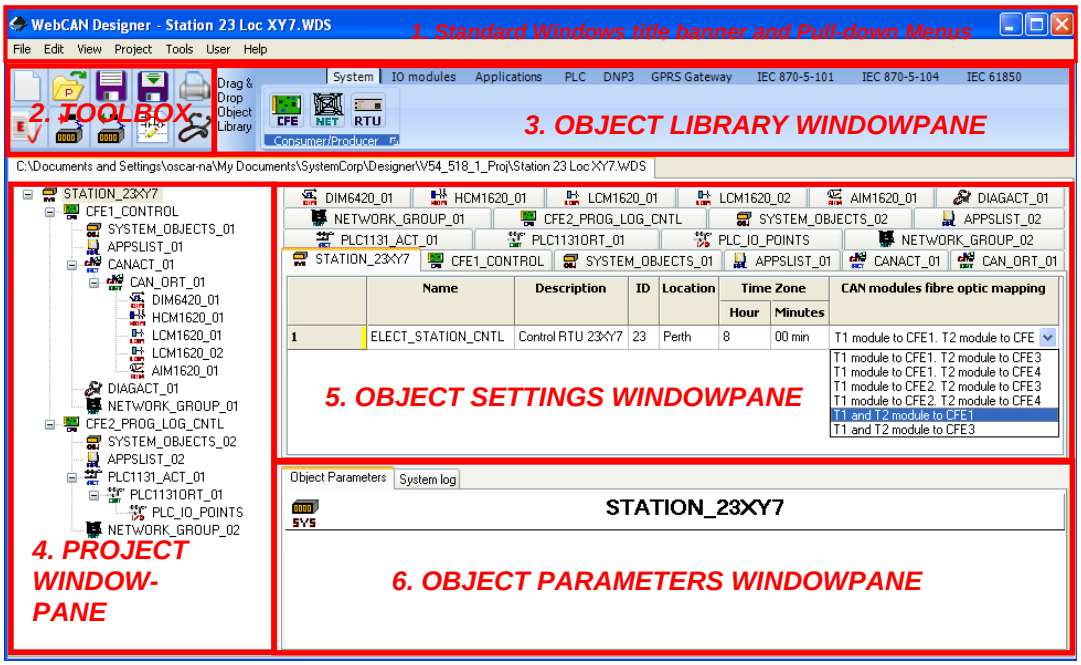


Figure 5-3 – WebCAN Designer Studio Windowpane Descriptions

Throughout this document, all the screens and menus show what is seen by a user with full access (i.e. an Administrator). Other users may have menu items inaccessible. For example, the default Diagnostician user Toolbox windowpane and pull-down menu items will have several items inaccessible (gray selections).

The 6 major parts of the WebCAN Designer Studio screen show:

1. ***Standard Windows*** title banner and ***Pull-down Menus***.
2. ***Toolbox*** – the 10 most used icons: New, Open, Save, Save As (backup), Print, Check (compile), Check and Download, Upload from the CFE, OpenPCS [refer 2], and System Diagnostics.
3. ***Object Library*** – Icons of objects that represents hardware modules [refer 3], other applications, and optional protocols. The specific WebCAN Designer Studio installation may contain optional protocols. For example, client and server protocol menus such as DNP3, GPRS Gateway, and/or IEC 61850 may or may not be available.
4. ***Project Window*** – Construction of the design is done in this windowpane. Assemble the project design in this windowpane by dragging and dropping objects from the *Object Library* windowpane into this windowpane in the specific order as required. Error checking prevents assembly of objects in an incorrect manner.
5. ***Object Settings*** – The settings for each object in the *Project Windowpane* are set in this windowpane.
6. ***Object Parameters*** – The parameters for each specific setting in the *Object Settings* windowpane are set in this windowpane.

5.2.1 Creating a New System Design with WebCAN Designer Studio

Also see "WebCAN Designer Studio Quick Walk-thru 3-Page Tour" above to see a quick complete design flow overview.

As an example, the following 10 pages create this design specification from the beginning through to download and diagnostics:

EXAMPLE Specification for "Station XYZ"

Use 2 Communication Front Ends (CFE). One contains the Controller Area Network (CAN) with input/output modules, and the other CFE Containing a SCADA Programmable Logic Controller (PLC) application.

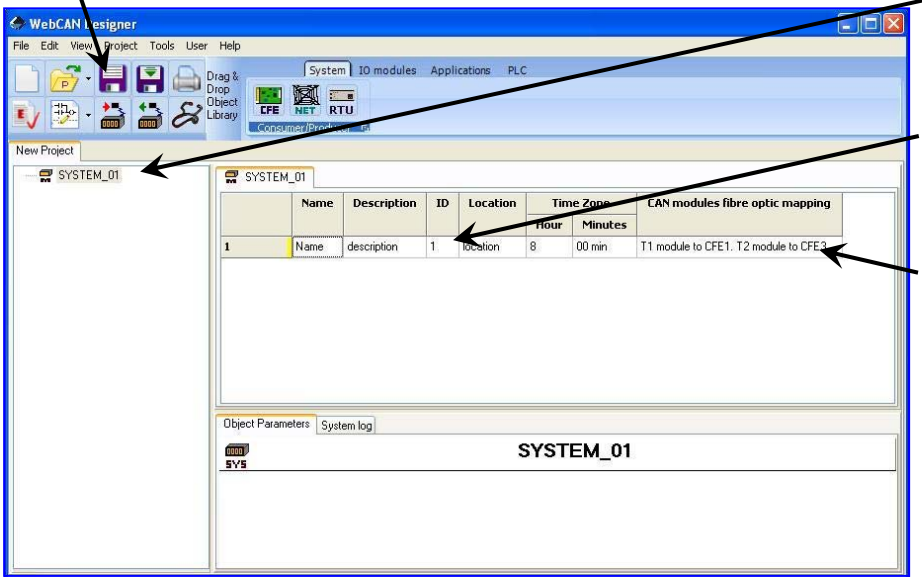
- **CFE1 "CAN_CFE"**
  - **Analog Alternating Current Input Module**
  - **Analog Direct Current Input Module**
  - **Digital Input Module**
  - **High Current Module**
  - **Low Current Module**
- **CFE2 "Ctrl_PLC" SCADA application**

Communication Front Ends (CFE's) both are networked together and have the ability to directly drive The Output modules (diagnostic application).

Redundant Master/Standby Time Sync Fibre Optic interface are also used.

Once appropriately logged-in (an "Administrator" or "Engineer" default user), create the design specification in WebCAN Designer Studio. Follow step-by-step to create the above example design specification for "Station XYZ" described.

✓ Save the project from time-to-time during the design entry process.

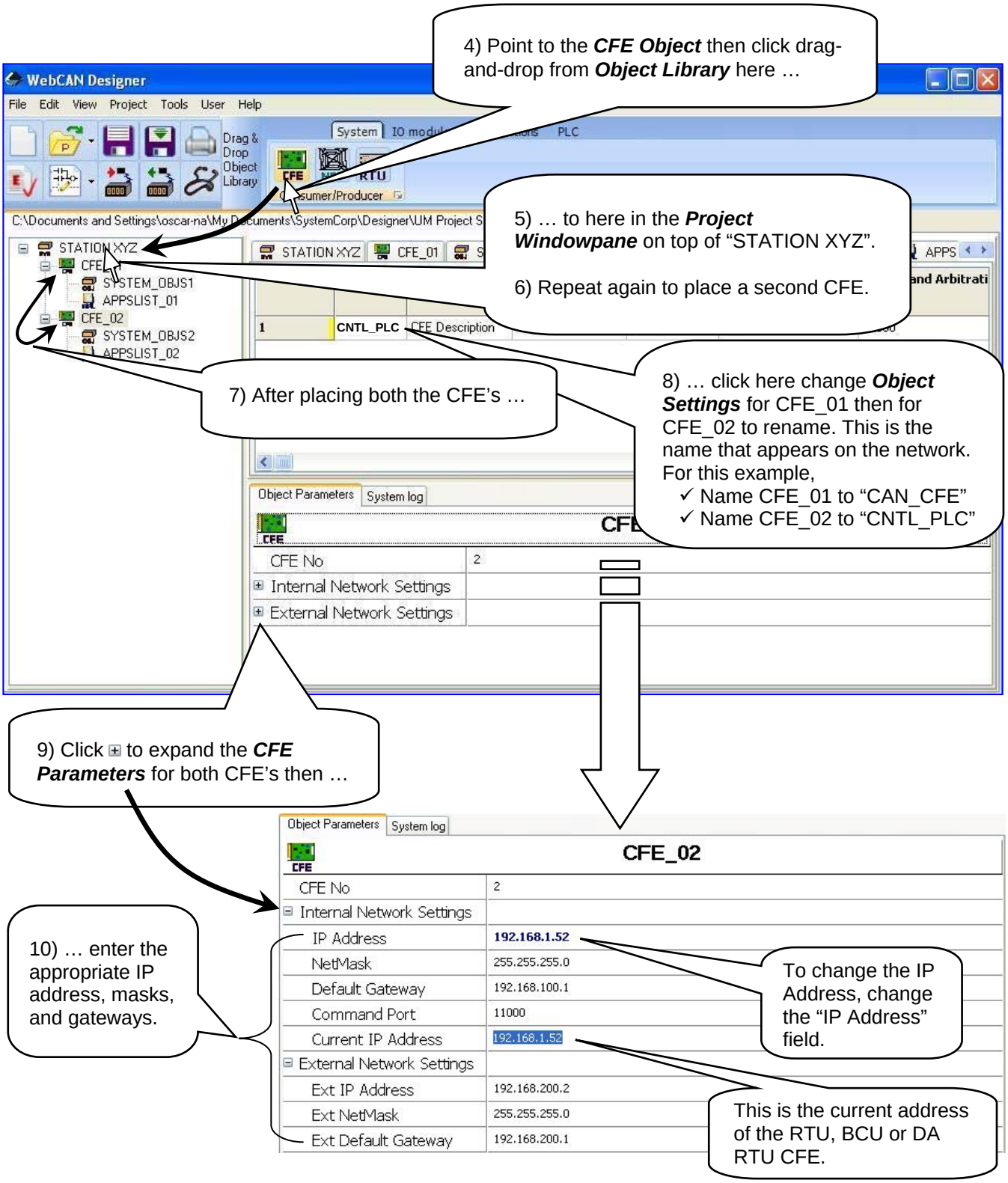

WebCAN Designer
File Edit View Project Tools User Help
System IO modules Applications PLC
Drag & Drop Object Library
CFE NET RTU
New Project
SYSTEM_01
SYSTEM_01
Name Description ID Location Time Zone Hour Minutes CAN modules fibre optic mapping
1 Name description 1 location 8 00 min T1 module to CFE1. T2 module to CFE2
Object Parameters System log
SYS
SYSTEM_01

1) Edit the Object names in the ***Project Windowpane***. Click on "SYSTEM_01" and change the name to "STATION XYZ".

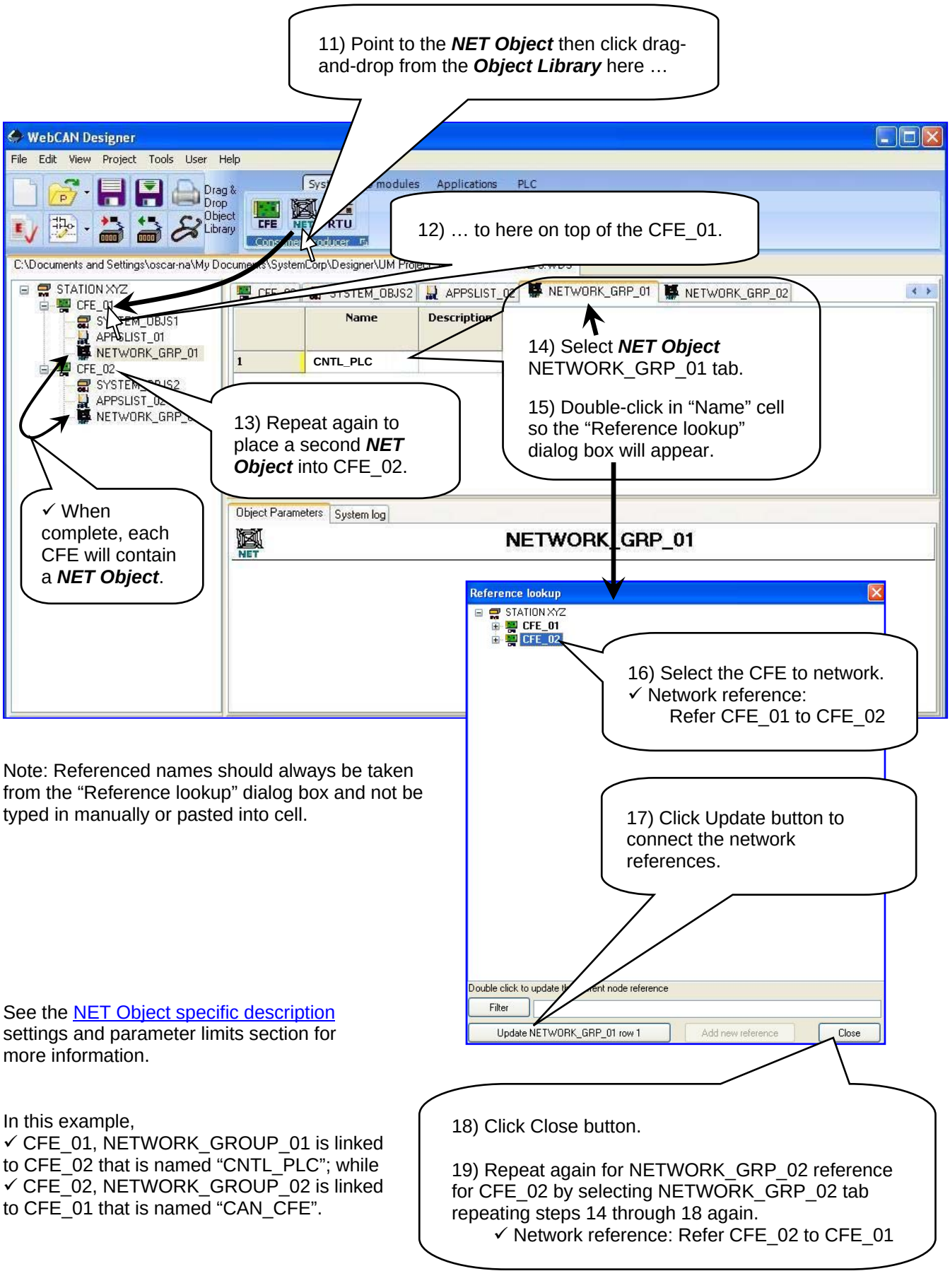
2) Insert the design's name, description, ID, location, and time zone in the ***Object Windowpane***.

3) Select the appropriate mapping of the Time Sync modules to the CFEs. Use pull-down menu to select "T1 and T2 module to CFE1" for this example.

✓ See ***System Object*** specific description, settings and parameter limits section. In addition, the Object Library Windowpane tabs only show "System", "IO Modules", "Applications" and "PLC". The specific WebCAN Designer Studio installation may contain several other client and server protocol menus (e.g. DNP3, GPRS Gateway, IEC 61850).


4) Point to the CFE Object then click drag-and-drop from Object Library here …
WebCAN Designer
File Edit View Project Tools User Help
Drag & Drop Object Library
System
PLC
RTU
STATION XYZ
CFE
SYSTEM_OBJS1
APPSLIST_01
CFE_02
SYSTEM_OBJS2
APPSLIST_02
5) … to here in the Project Windowpane on top of "STATION XYZ".
6) Repeat again to place a second CFE.
7) After placing both the CFE's …
8) … click here change Object Settings for CFE_01 then for CFE_02 to rename. This is the name that appears on the network. For this example,
✓ Name CFE_01 to "CAN_CFE"
✓ Name CFE_02 to "CNTL_PLC"
Object Parameters
System log
CFE No
Internal Network Settings
External Network Settings
9) Click ⊞ to expand the CFE Parameters for both CFE's then …
CFE_02
IP Address
192.168.1.52
NetMask
255.255.255.0
Default Gateway
192.168.100.1
Command Port
11000
Current IP Address
192.168.1.52
Ext IP Address
192.168.200.2
Ext NetMask
255.255.255.0
Ext Default Gateway
192.168.200.1
10) … enter the appropriate IP address, masks, and gateways.
To change the IP Address, change the "IP Address" field.
This is the current address of the RTU, BCU or DA RTU CFE.

See the ***CFE Object*** specific description, settings and parameter limits section.


11) Point to the ***NET Object*** then click drag-and-drop from the ***Object Library*** here …
12) … to here on top of the CFE_01.
WebCAN Designer
File Edit View Project Tools User Help
Drag & Drop Object Library
CFE
RTU
STATION XYZ
CFE_01
APPSLIST_01
NETWORK_GRP_01
CFE_02
NETWORK_GRP_02
Name
Description
1
CNTL_PLC
14) Select ***NET Object*** NETWORK_GRP_01 tab.
15) Double-click in "Name" cell so the "Reference lookup" dialog box will appear.
13) Repeat again to place a second ***NET Object*** into CFE_02.
✓ When complete, each CFE will contain a ***NET Object***.
Object Parameters
System log
NETWORK_GRP_01
Reference lookup
STATION XYZ
CFE_01
CFE_02
16) Select the CFE to network.
✓ Network reference:
Refer CFE_01 to CFE_02
17) Click Update button to connect the network references.
Filter
Update NETWORK_GRP_01 row 1
Add new reference
Close
18) Click Close button.
19) Repeat again for NETWORK_GRP_02 reference for CFE_02 by selecting NETWORK_GRP_02 tab repeating steps 14 through 18 again.
✓ Network reference: Refer CFE_02 to CFE_01

Note: Referenced names should always be taken from the "Reference lookup" dialog box and not be typed in manually or pasted into cell.

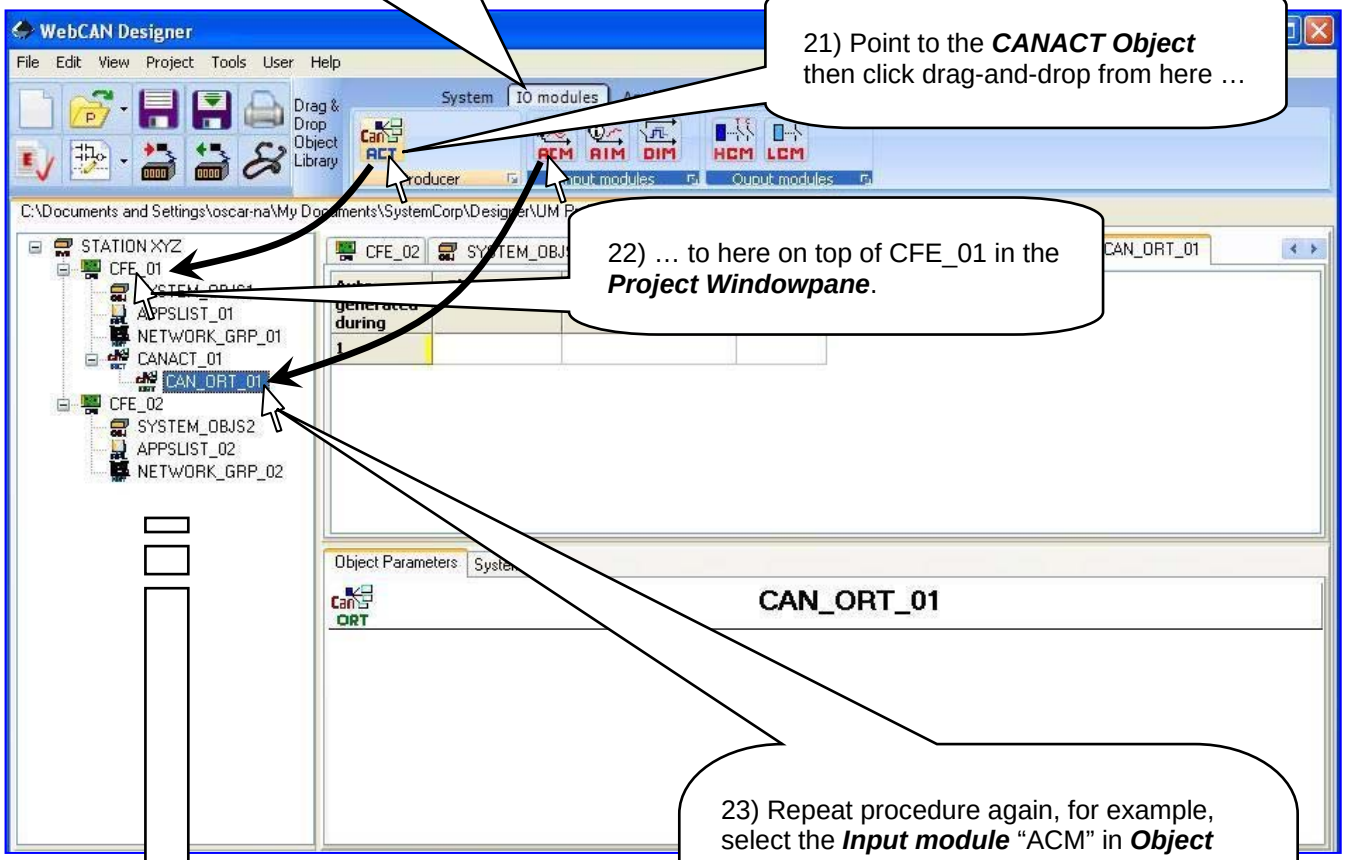
See the NET Object specific description settings and parameter limits section for more information.

In this example,
✓ CFE_01, NETWORK_GROUP_01 is linked to CFE_02 that is named "CNTL_PLC"; while
✓ CFE_02, NETWORK_GROUP_02 is linked to CFE_01 that is named "CAN_CFE".

20) Select the ***IO Modules*** tab.

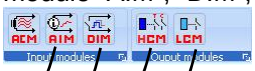
21) Point to the ***CANACT Object*** then click drag-and-drop from here …

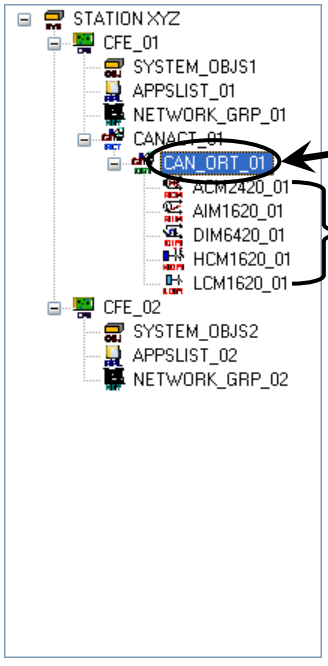
22) … to here on top of CFE_01 in the ***Project Windowpane***.



23) Repeat procedure again, for example, select the ***Input module*** "ACM" in ***Object Library windowpane*** then drag-and-drop the "ACM" object on top of the "CAN_ORT_01" object in the ***Project Windowpane***.

24) Repeat drag-and-drop again for each IO module "AIM", "DIM", "HCM", and "LCM".



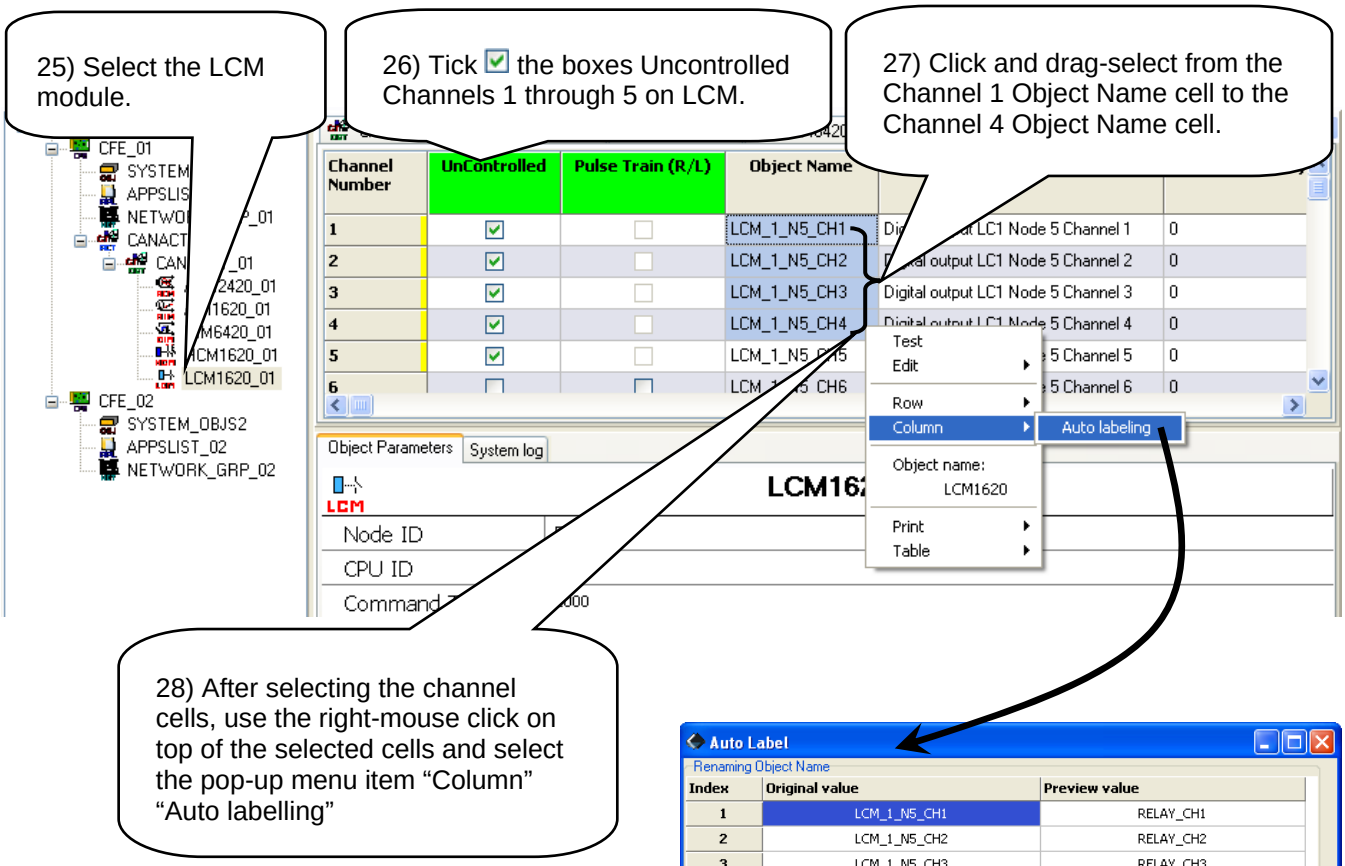


Each I/O Object has specific settings and parameters (e.g. individual channel specifications, specific individual channel Object Names, Descriptions, time parameters).

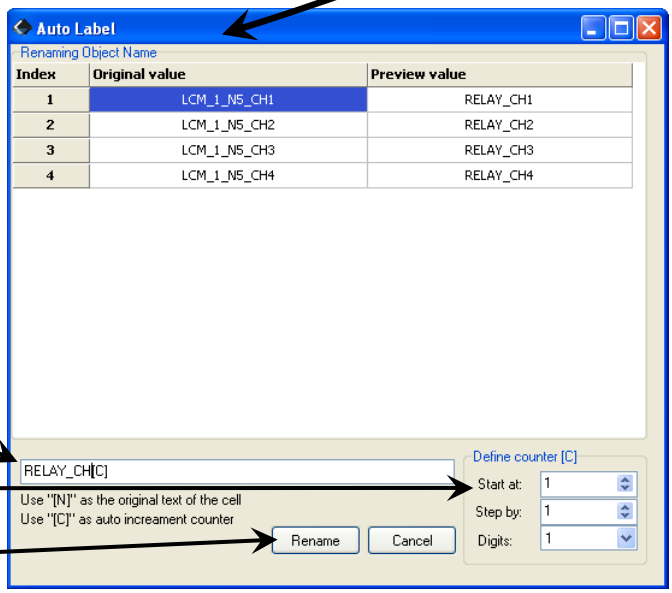
See the specific module Object Settings and Parameters sections for more information;

- ACM – Analog AC Input Module
- AIM – Analog DC Input Module
- DIM – Digital Input Module
- HCM – High Current Module
- LCM – Low Current Module

In this example, a PLC program will drive the Low Current Module (LCM) outputs channels 1 through 5. Therefore, the appropriate external variable names need to be referenced. The default names that appear may be used or they can be renamed. The following describes how to change names or a group of names.



28) After selecting the channel cells, use the right-mouse click on top of the selected cells and select the pop-up menu item “Column” “Auto labelling”



29) Using the ***Auto label*** dialog box, enter a sequence of names. In this example, create “RELAY_CH1” through to “RELAY_CH4”.

To use Auto Label:

a. Enter the Object name “RELAY_CH” and the number as “[C]”
(Note: uppercase “[C]”)

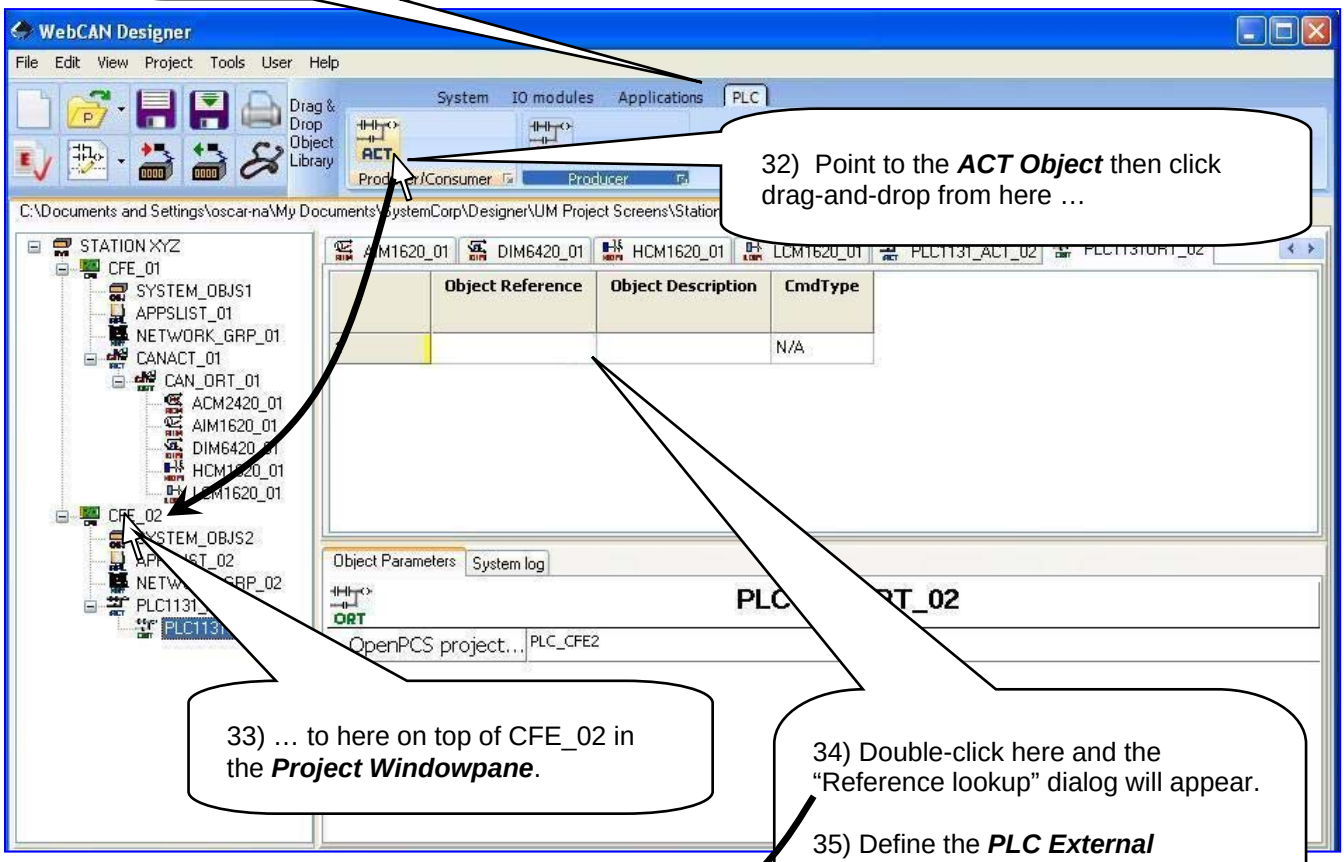
b. Numbering can be incremented or decremented starting on any integer.

c. Click Rename button after confirming the “Preview value” is correct.
This will close the Auto label dialog box and channels 1 through 4 will be renamed to “RELAY_CH1” through to “RELAY_CH4”.

30) By selecting a single cell, any specific cell name may change by simply typing in the cell. In this example, select the cell for Object Name, Channel Number 5 then type “CNT_SIGNAL”.

A similar process of Settings and Parameters must be done for all other objects. For this particular example, look at the other particular settings and parameters (e.g. ACM, AIM, DIM, HCM, LCM).

31) Select the ***PLC*** tab.

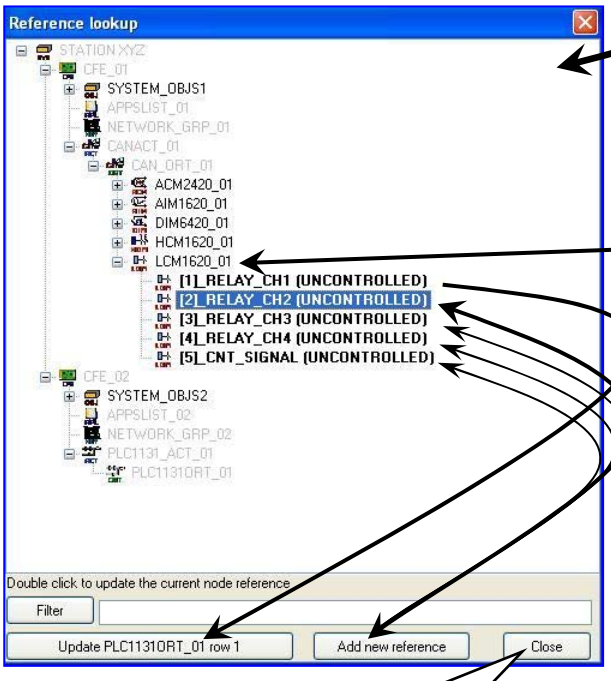


32) Point to the ***ACT Object*** then click drag-and-drop from here …

33) … to here on top of CFE_02 in the ***Project Windowpane***.

34) Double-click here and the "Reference lookup" dialog will appear.

35) Define the ***PLC External Variables*** by referring to the individual channel ***Object Names*** that define each specific Object in the ***Object Settings Windowpane***.

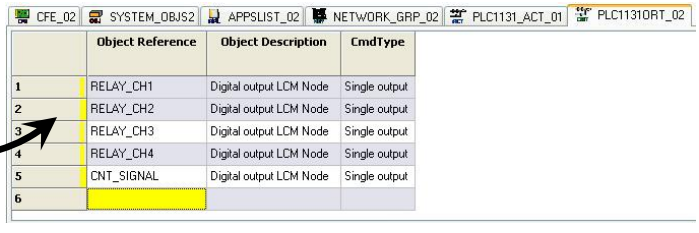


As with other objects the ***PLC Object*** requires settings and parameters (e.g. a license key).

36) Click ⊞ on the LCM to expand to view the list of names.

37) First, select "RELAY_CH1" then click "Update" button.

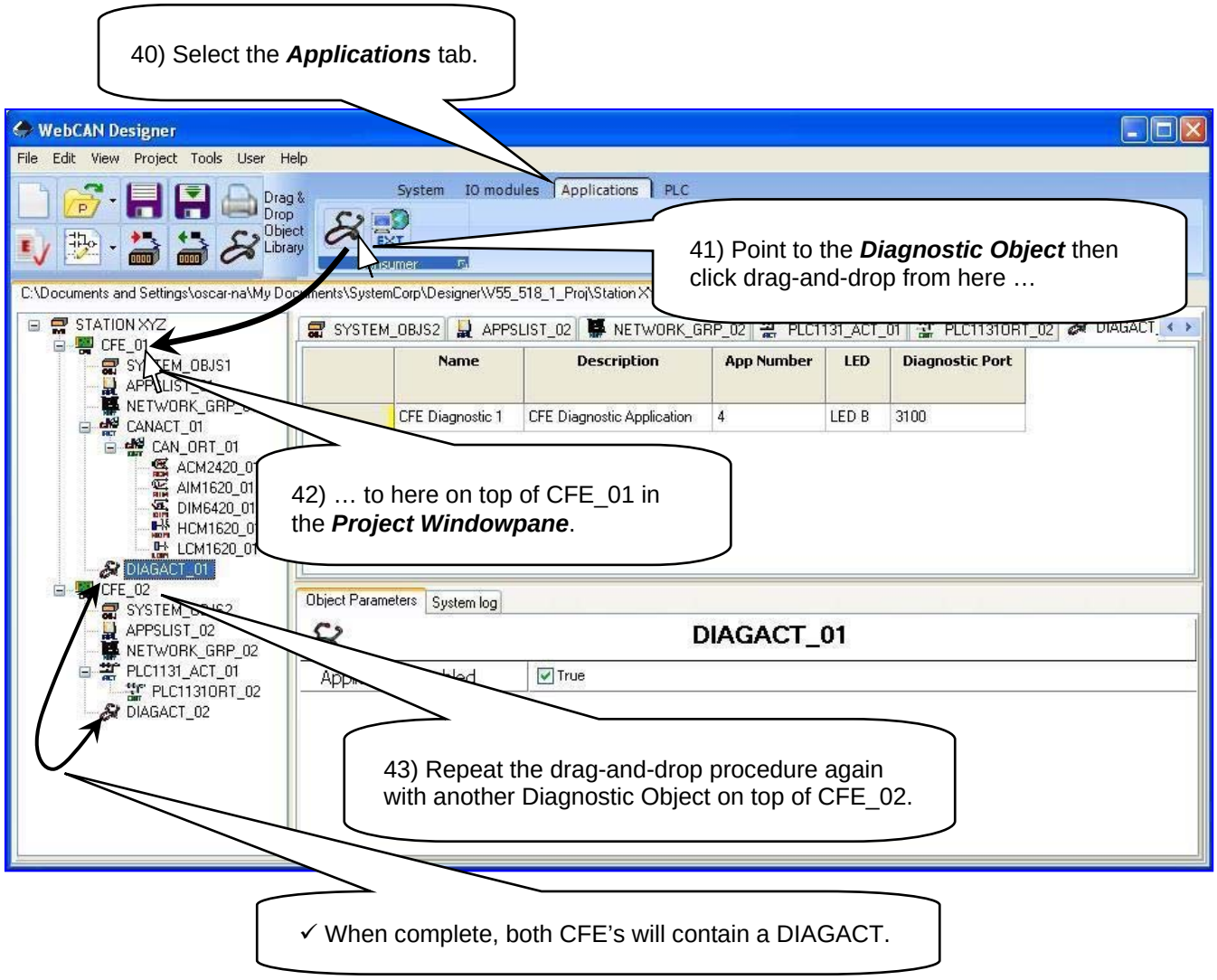
38) Select each variable in turn and click on "Add new reference" button repeatedly for each of the selected remaining variables ("RELAY_CH2", "RELAY_CH3", "RELAY_CH4", then "CNT_SIGNAL").



	Object Reference	Object Description	CmdType
1	RELAY_CH1	Digital output LCM Node	Single output
2	RELAY_CH2	Digital output LCM Node	Single output
3	RELAY_CH3	Digital output LCM Node	Single output
4	RELAY_CH4	Digital output LCM Node	Single output
5	CNT_SIGNAL	Digital output LCM Node	Single output
6			

39) When complete, click on "Close" button. The ***Object Settings*** windowpane now show references.

For this example, add the Diagnostic Application. By adding this application to the RTU hardware, WebCAN Design Studio will be able to run a view all CAN activity in real-time. In addition, be able to probe and drive input and output channels.

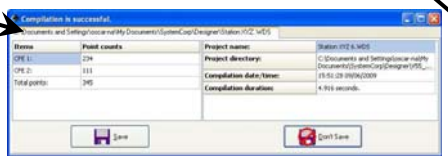


See the ***Diagnostic Object*** specific description, settings and parameter limits section.

44) Click the Save icon to save the WebCAN project.

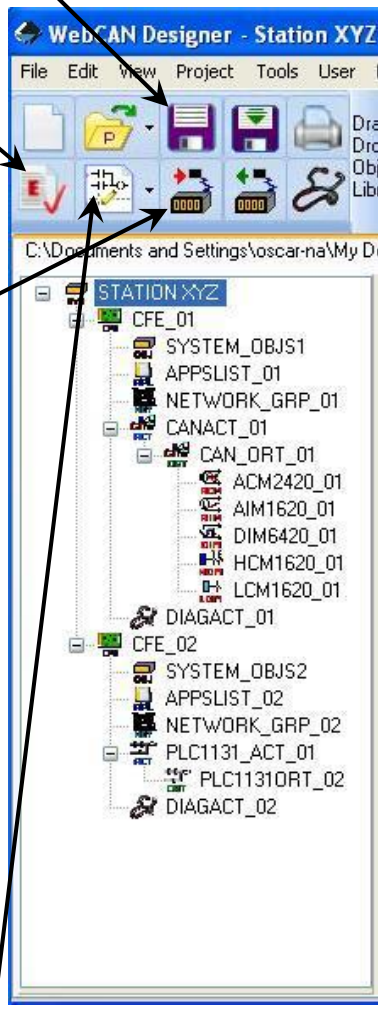
45) Click the Error Check (compile) icon for the project.

Compiling will check the entire design for errors. If the check is successful then a dialog box with design information and Save button will appear.

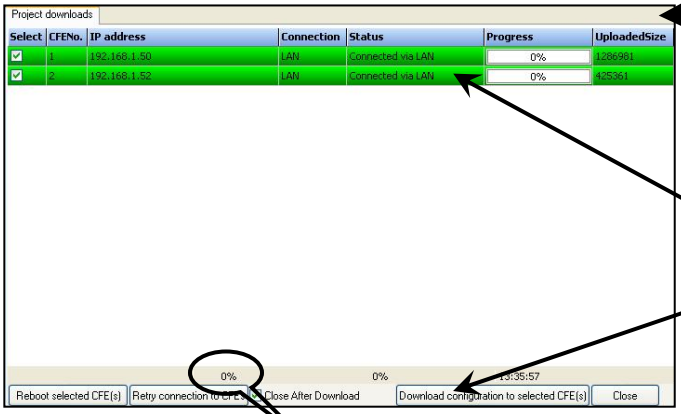


Alert Messages will appear in lower right corner of the WDS window displaying the errors. For this example, if a valid PLC license does not exist then this Alert Message will appear.

View all project Alert Messages any time by selecting the "Alert Messages" under the View menu. (Also, see Alert Messages list.)



46) Click the Download icon button. Download Project windowpane appears.


Project downloads
Select CFENo. IP address Connection Status Progress UploadedSize
1 192.168.1.50 LAN Connected via LAN 0% 1286961
2 192.168.1.52 LAN Connected via LAN 0% 425361
0% 0% 13:35:57
Reboot selected CFE(s)
Close After Download
Download configuration to selected CFE(s)
Close

✓ Click "Save" as required.

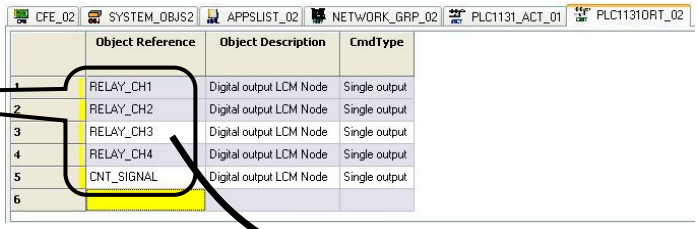
✓ Confirm that the CFE's are available on-line – Status: "Connected via LAN or USB".

47) Click the "Download configuration to selected CFE(s)" button.

48) Once the download is 100% complete, the CFE(s) will reboot automatically after a 5 second count down when the CFE(s) are 100% downloaded. Note that closing this dialog tab prior to the reboot message will cancel rebooting CFE(s).

Note: Unless the hardware [reference 3] is configured as described in this example the connection and download will not succeed.

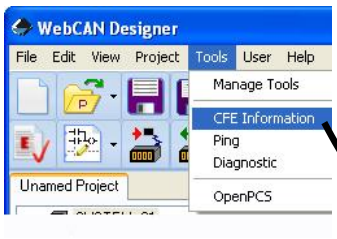
49) Use Infoteam OpenPCS application to create the PLC program, click the OpenPCS icon to open the OpenPCS application [references 1 and 2]. WebCAN Designer Studio has integrated OpenPCS by automatically creating the OpenPCS environment with the appropriate external variables. In this example, all the PLC references:



✓ Note that Infoteam OpenPCS requires a software licence key.

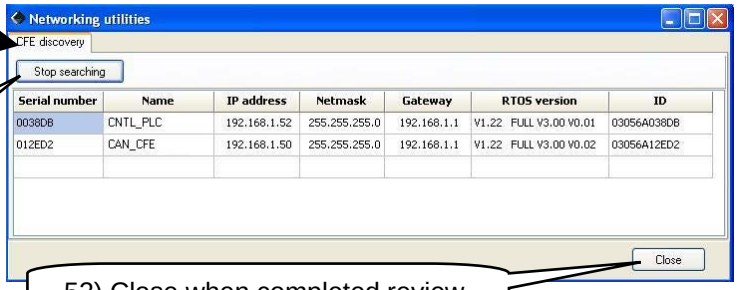
✓ All Object references are passed directly to the to the OpenPCS environment prior to the download of the CFE(s). See information in Download section.

OpenPCS



The downloaded design is now running.

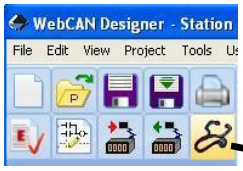
50) Confirm that the CFE's are now on line. In this example CFE_01 is named "CAN_CFE" and CFE_02 is named "CNTL_PLC". By selecting the Tools menu item "CFE Information" a dialog box will appear showing the CFE names, network IP address, and other information. Review that the system is online.



51) Start or stop searching for CFE's on network.

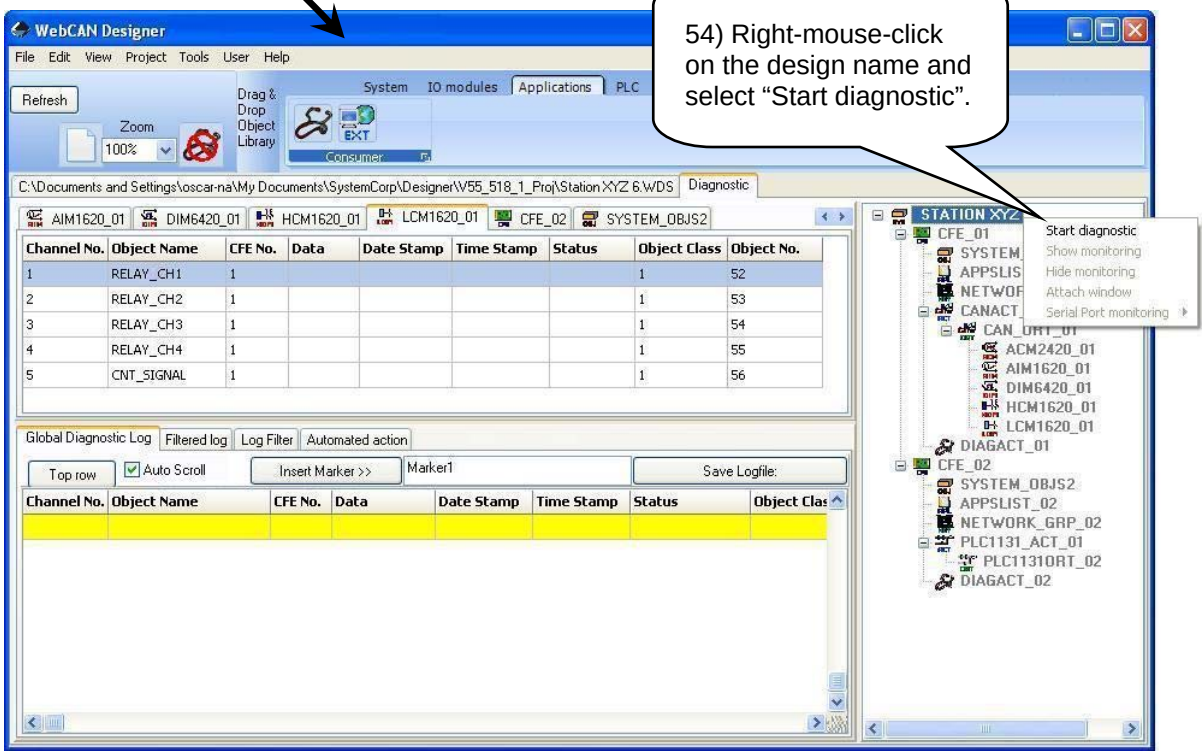
52) Close when completed review.

Run Diagnostics to view real-time activity occurring on the system.



53) Click the Diagnostic icon to enter WebCAN Designer Studio Diagnostic mode.

54) Right-mouse-click on the design name and select "Start diagnostic".



For more details for using Diagnostics see the Diagnostic Section in this manual for more information.

The above example walks through the design creation process from beginning to end. Numerous details for setting ***Object Settings and Parameters*** have been omitted to convey the overall creation process. The following pages describe the specific settings and parameters for each object. In addition, unless the hardware [reference 3] is assembled as described in this example the connection, download, and diagnostics will not work as described. The Diagnostic user guide and Diagnostic pop-up menu reference sections further describes the use and features of diagnostics. The creation of a PLC program using OpenPCS is beyond the scope of this document (for more information, refer to the OpenPCS manual [reference 2]).

To summarize creating a new design:

1. Click, drag-and-drop objects from the ***Object Library*** to ***Project Windowpane***. CFE objects must be placed first before placing other objects.

2. Edit the Object names, descriptions, and other settings in the ***Object Settings*** and ***Parameters windowpane*** for each object placed in the ***Project windowpane***. Enter Object Names one by one. Edit other sequential lists one by one or by selecting the cells to edit then right-mouse-click the menu item to column Auto label. Auto label allows the quick creation of names or descriptions that have a numerical sequence. For example: CH3, CH2, CH1; CH2, CH4, CH6; CH13_3, CH14_2, CH15_1. CH16_0.

3. Save the WebCAN design project.

4. Error Check (compile) the project. Compiling will check the entire design for errors. “Alert Messages” will appear in lower left corner of the WDS window displaying the errors.

5. Download the project.
    a. Confirm that the CFE’s are available on-line (Status: “Connection established”).
    b. Click the “Download configuration to selected CFE(s)” button.

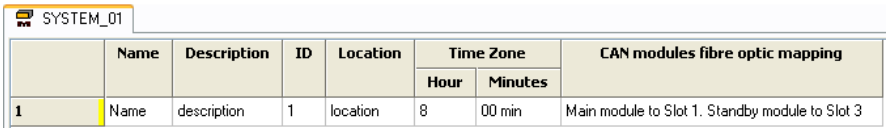
6. Using Infoteam OpenPCS application create the PLC program as required. For details, see the OpenPCS application references [1 and 2]. WebCAN Designer Studio integrated OpenPCS by automatically creating the OpenPCS environment with the appropriate external variables. All Object References from WebCAN Designer Studio are passed directly to the OpenPCS environment.

7. Enter diagnostics to view or directly drive the I/O module channels.

The following pages refer to the specific Object, Object Settings, and Object Parameters descriptions and limits for every Object.

5.2.1.1 *SYSTEM Settings*

The System object is the root, parent level or base for your design project. This object cannot be removed.



SYSTEM_01 Settings:	Default	Min	Max	Units
Name	WebCAN	2	32	Text Characters
Description	WebCAN description	0	64	Text Characters
ID	1	0	255	Numbers
Location	WebCAN location	0	64	Text Characters
Time Zone Hour	8	-12	14	Hours
Time Zone Minutes	00	00	45	Minutes Drop Down
CAN modules fibre-optic mapping	Menu Choices			Drop-down menu choices

NOTE: All text characters must be uppercase, underscores "_", and numbers only. No Spaces, ".", "-", or special characters of any kind are allowed.

CAN modules fibre-optic mapping Drop-Down Menu choices:	
T1 module to CFE 1. T2 module to CFE 3	← Default value
T1 module to CFE 1. T2 module to CFE 4	
T1 module to CFE 2. T2 module to CFE 3	
T1 module to CFE 2. T2 module to CFE 4	
T1 and T2 module to CFE 1	
T1 and T2 module to CFE 3	

Table 5-1 – System Settings

For T2 and T2 Hardware mapping see “Setting up the CANopen Fibre Network” section in hardware manual [reference 3].

5.2.1.2 *SYSTEM Parameters (none)*

This OBJECT has no Parameters.

5.2.2 Communications Front-End (CFE) Object

5.2.2.1 CFE Description

User Administration “EditProject” must be ☑ set.

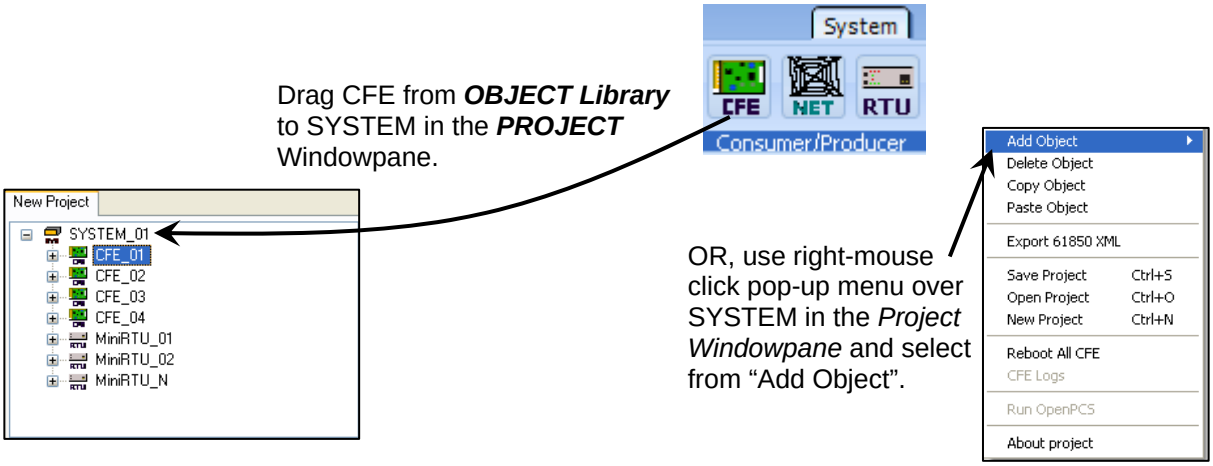


Figure 5-4 – Add CFE object from Object Library to Project Windowpane

5.2.2.2 CFE Settings

CFE_01 Settings	Default	Min	Max	Units
Name	CFE No.1	1	32	Text Characters
Description	CFE [1,2,3 or 4] Description	0	64	Text Characters
Command Timeout	1000	1000	600000	milliseconds
Command Arbitration Timeout	10000	0	600000	milliseconds
Time Sync Arbitration Timeout	10000	0	600000	milliseconds
LED (This shows DB active)	LED A	A	D	CFE LED on front panel of hardware

Table 5-2 – CFE Settings

NOTE: All text characters must be uppercase, underscores "_", and numbers only. No Spaces, ".", "-", or special characters of any kind are allowed.

5.2.2.3 *CFE Parameters*

CFE Object Parameters:	Default	Min	Max	Description
CFE No	CFE NO 1	1	32	CFE Number 1 thru 32
Ethernet Port 1 IP Address	192.168.100.1	n/a	n/a	Unique CFE IP Address
NetMask	255.255.255.0	n/a	n/a	
Default Gateway	192.168.100.1	n/a	n/a	
Current IP Address	192.168.100.1	n/a	n/a	CFE IP Address in rack
Ethernet Port 2 Ext IP Address	192.168.100.2	n/a	n/a	External IP Address
Ext NetMask	255.255.255.0	n/a	n/a	
Ext Default Getway	192.168.100.1	n/a	n/a	

Table 5-3 – CFE Parameters

5.2.3 Network (NET) Object

5.2.3.1 NET Description

User Administration "EditProject" must be ☑ set.

This object is required to interconnect multiple CFE's.

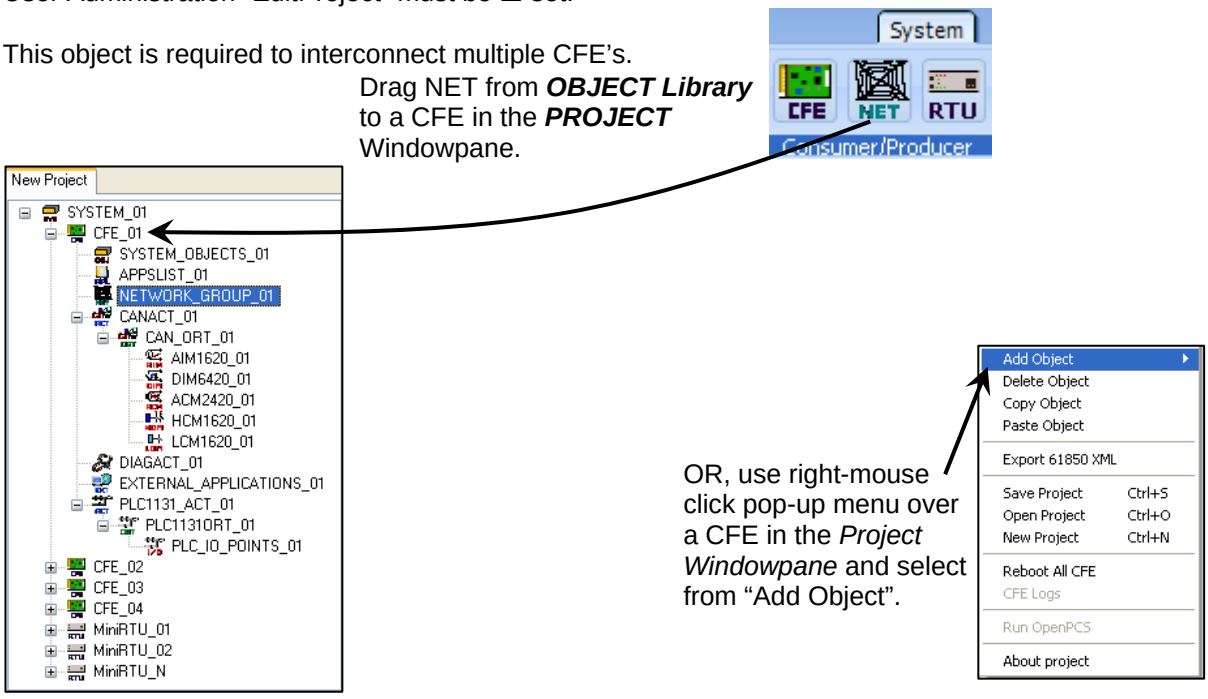


Figure 5-5 – Add NET object from Object Library to Project Windowpane

5.2.3.2 NET Settings

NET Settings:	Description
Name	Reference lookup from other CFEs
Description	Reference lookup from other CFEs text

Table 5-4 – NET Settings

5.2.3.3 NET Parameters (none)

This OBJECT has no Parameters.

5.2.4 Mini Remote Terminal Unit (RTU) Object

5.2.4.1 RTU Description

User Administration "EditProject" must be ☑ set.
This stripped-down single CFE can be networked into the RTU rack and/or other mini RTUs.

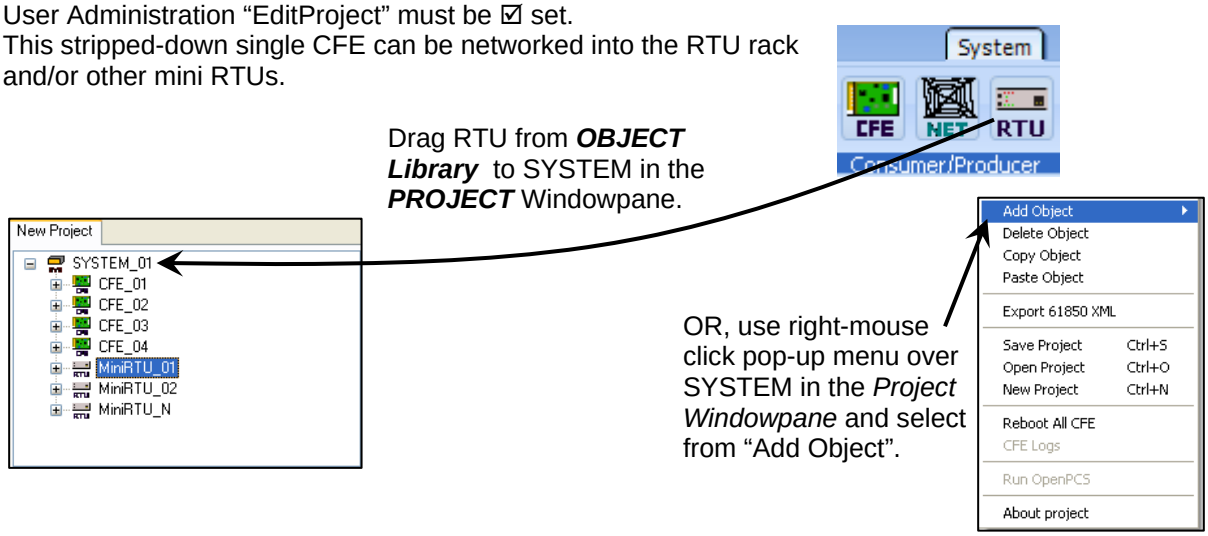


Figure 5-6 – Add CFE object from Object Library to Project Windowpane

5.2.4.2 RTU Settings

RTU Settings:	Default	Min	Max	Units
Name	MiniRTU No.1	0	255	Text Characters
Description	CFE Description	0	255	Text Characters
Consumer Port	10000	0	65000	Integer
Status Port	10000	0	65000	Integer
Command Timeout	10000	1000	60000	Milliseconds
Command Arbitration Timeout	10000	0	60000	Milliseconds
Time Sync Arbitration Timeout	10000	0	60000	Milliseconds
CFE Startup Time	12000	0	60000	Milliseconds
LED	LED A	A	D	CFE LED

Table 5-5 – RTU Settings

NOTE: All text characters must be uppercase, underscores "_", and numbers only. No Spaces, ".", "-", or special characters of any kind are allowed.

5.2.4.3 RTU Parameters

RTU Object Parameters:	Default	Min	Max	Description
RTU No	1	1	4	CFE Number 1, 2, 3, or 4
Internal Network Settings IP Address	192.168.100.1			
NetMask	255.255.255.0			
Default Gateway	192.168.100.1			
Command Port	11000	0	65000	
Current IP Address	192.168.100.1			
External Network Settings Ext IP Address	192.168.100.1			
Ext NetMask	255.255.255.0			
Ext Default Getway	192.168.100.1			

Table 5-6 – RTU Parameters

5.2.5 CAN Application Configuration Table (CANACT) Object

5.2.5.1 CANACT Description

User Administration "EditProject" must be ☑ set.

This is the parent or base to attach the Input and Output module objects.

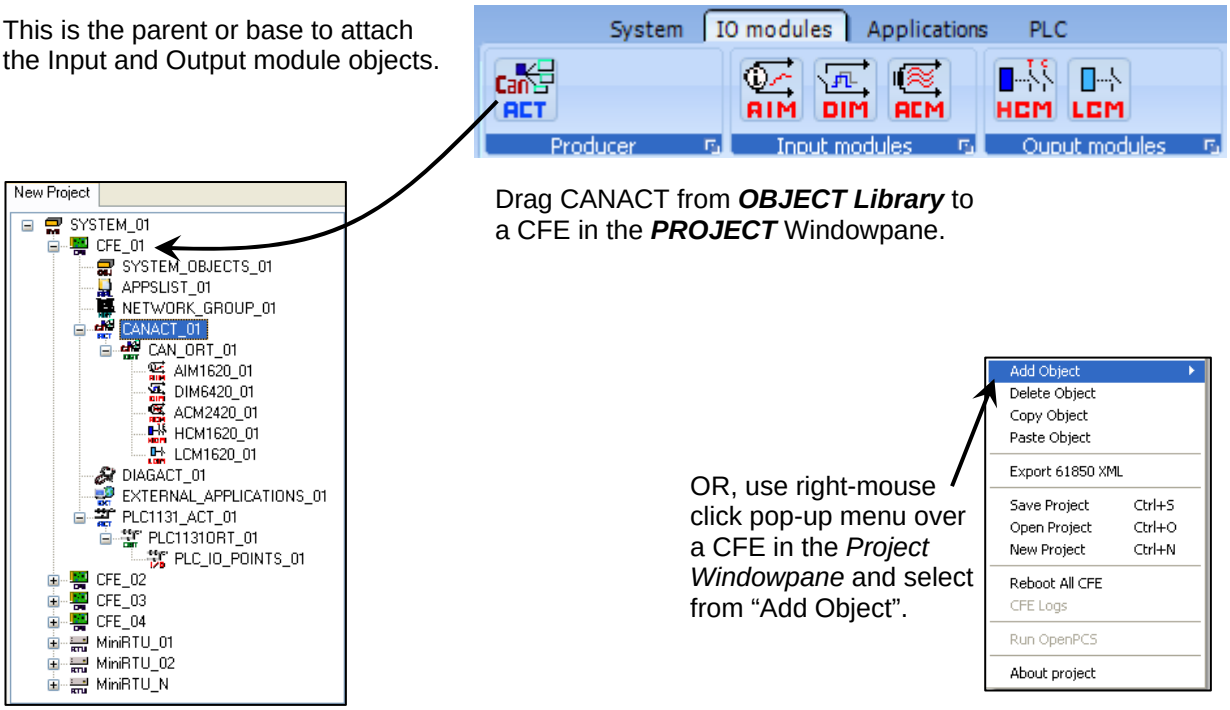


Figure 5-7 – Add CANACT object from Object Library to Project Windowpane

5.2.5.2 CANACT Settings

CANACT Settings:	Default	Min	Max	Units
Name	CAN_HANDLER_1	1	32	Text Characters
Description	CAN Handler Appl	0	64	Text Characters
App Number	1	1	20	Integer – Automatically assigned

Table 5-7 – CANACT Settings

NOTE: All text characters must be uppercase, underscores "_", and numbers only. No Spaces, ".", "-", or special characters of any kind are allowed.

5.2.5.3 CANACT Parameters

CANACT Object Parameters:	Default	Min	Max	Description
Application Enabled	True ☑	False ☐	True ☑	Tick Box ☐ or ☑

Table 5-8 – CANACT Parameters

5.2.6 Analog Input Module (ACM) Alternating Current (AC) Object

5.2.6.1 ACM Description

User Administration "EditProject" must be ☑ set.

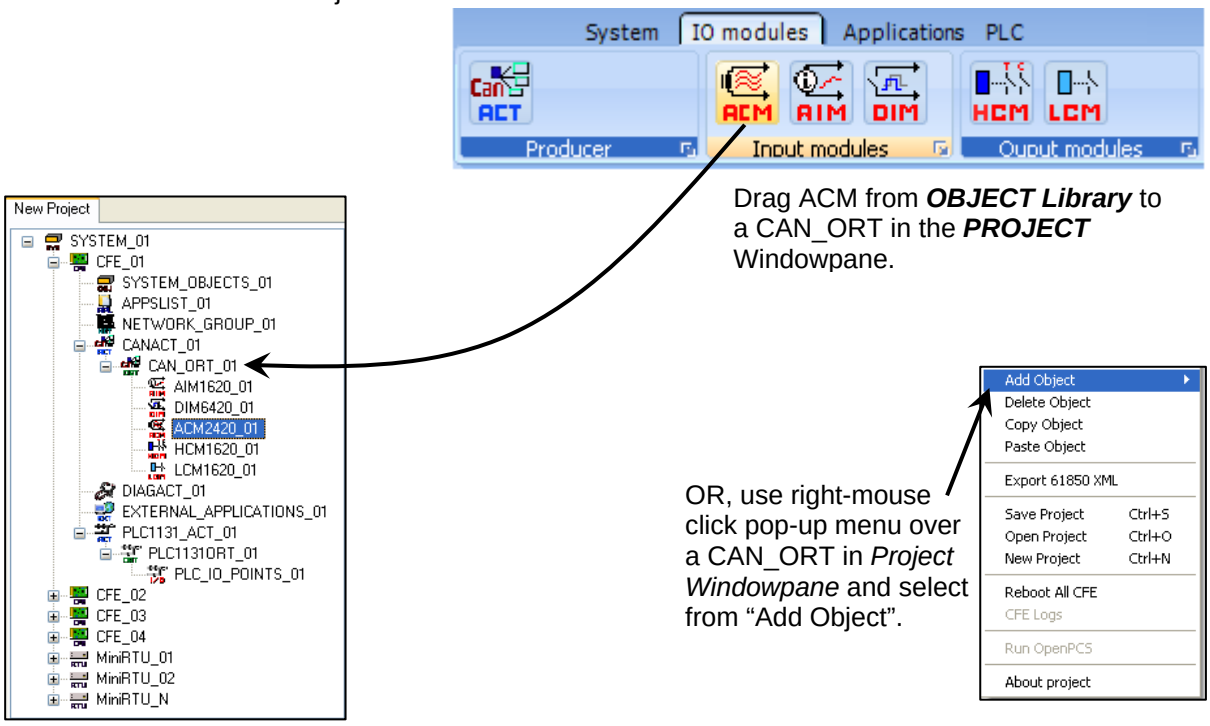
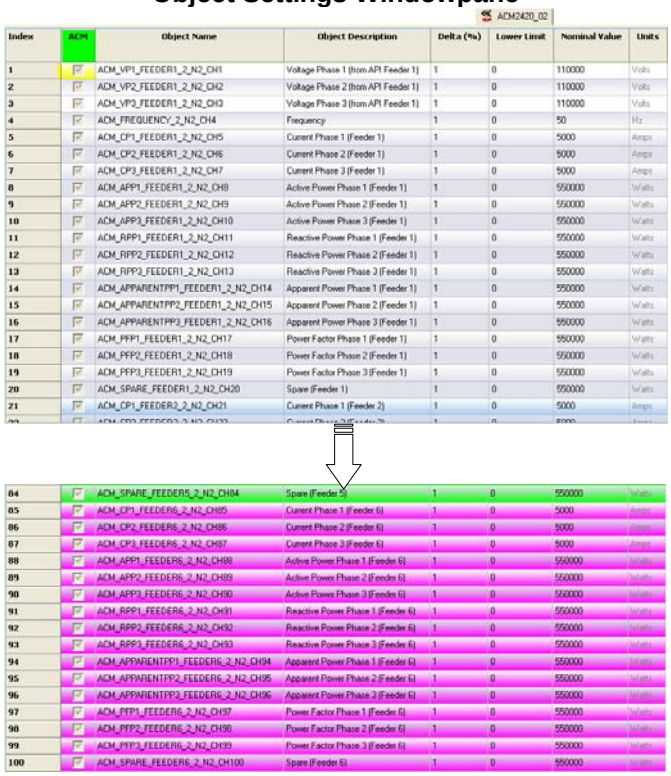


Figure 5-8 – Add ACM object from Object Library to Project Windowpane

Object Settings Windowpane



5.2.6.2 *ACM Settings*

ACM Settings:	Default	Min	Max	Units
ACM	No Tick ☑	No Tick ☐	Tick ☑	Tick Box ☐ or ☑
Object Name				Text Characters
Object Description				Text Characters
Delta (%)	1	0	65535	Percentage
Lower Limit	0	0	65535	Integer
Voltage: Nominal Value	110000	0	65535	Volts
Frequency: Nominal Value	50	0	65535	Hz
Current: Nominal Value	5000	0	65535	Amps
Active Power: Nominal Value	550000	0	65535	Watts
Reactive Power: Nominal Value	550000	0	65535	Watts
Apparent Power: Nominal Value	550000	0	65535	Watts
Power Factor: Nominal Value	550000	0	65535	Watts
Spare: Nominal Value	550000	0	65535	Watts

Table 5-9 – ACM Settings

NOTE: All text characters must be uppercase, underscores "_", and numbers only. No Spaces, ".", "-", or special characters of any kind are allowed.

5.2.6.3 *ACM Parameters*

ACM Object Parameters:	Default	Min	Max	Description
Node ID	1	1	15	Identification of I/O Module set in hardware. See "Node ID Configuration using the DSP-10" section [Reference 3].
CPU ID	1	1	2	Identification of CPU.
Read Cycle Time (ms)	500	0	65535	Menu choice 50 or 60 Hz
Active Busbar	1	1	2	
Node Description	1 Node 1 Description	0	64	Text Characters

Table 5-10 – ACM Parameters

5.2.7 Analog Input Module (AIM) Direct Current (DC) Object

5.2.7.1 AIM Description

User Administration “EditProject” must be ☑ set.

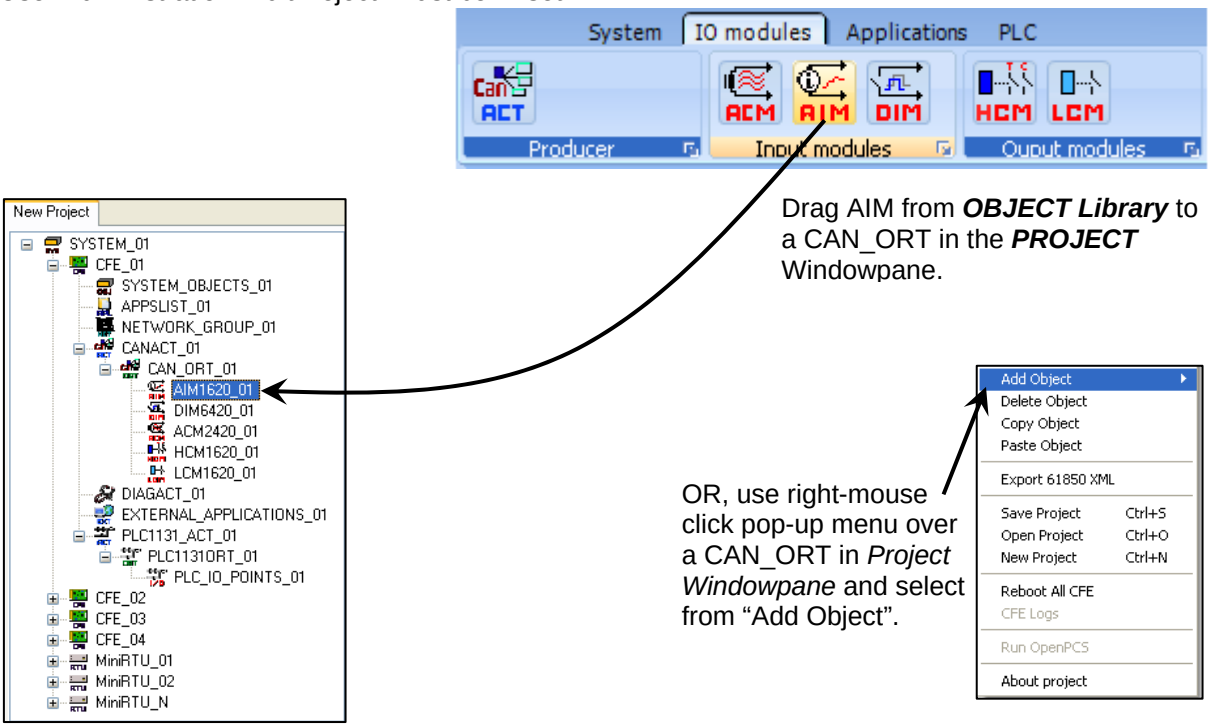


Figure 5-9 – Add AIM object from Object Library to Project Windowpane

5.2.7.2 AIM Common Settings

AIM Common Settings:	Default	Min	Max	Units
AI	No Tick ☐	No Tick ☐	Tick ☑	Tick Box ☐ or ☑
AI TAP	No Tick ☐	No Tick ☐	Tick ☑	Tick Box ☐ or ☑
Object Name	AIM_1_N3	1	32	Text Characters
Object Description	Obj Descript	0	64	Text Characters
Max Current (in mA)	21	20	21	Milliamps
Averaging	1	1	900	Integer

Table 5-11 – AIM Common Settings

NOTE: All text characters must be uppercase, underscores "_", and numbers only. No Spaces, ".", "-", or special characters of any kind are allowed.

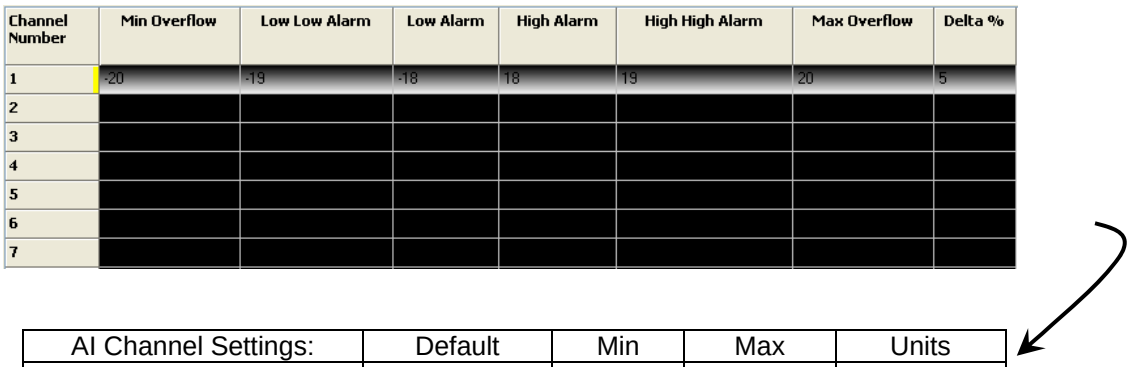
5.2.7.3 AIM Common Parameters

AIM Common Parameters:	Default	Min	Max	Description
Node ID	1	1	15	Identification of I/O Module set in hardware. See “Node ID Configuration using the DSP-10” section [Reference 3].
CPU ID	1	1	2	Select integer
Frequency (in Hertz)	50	50	60	Menu choice 50 or 60 Hz
Node Description	1 Node 1 Description	0	64	Text Characters

Table 5-12 – AIM Common Parameters

5.2.7.4 *AIM AI and AI TAP Channel Settings and Parameters*

5.2.7.4.1 AI Specific Settings

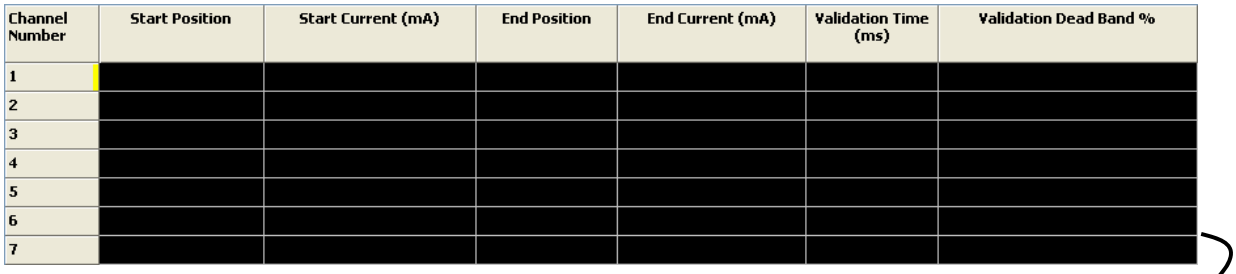


AI Channel Settings:	Default	Min	Max	Units
Min Overflow	-20	-25	25	Integer
Low Low Alarm	-19	-25	25	Integer
Low Alarm	-18	-25	25	Integer
High Alarm	18	-25	25	Integer
High High Alarm	19	-25	25	Integer
Max Overflow	20	20	20	Integer
Delta %	5	0	65535	Percentage

Table 5-13 – AI Channel Specific Settings

AI Specific Object Parameters: None

5.2.7.4.2 AI TAP Specific Settings



AI TAP Channel Settings:	Default	Min	Max	Units
Start Position	1	1	30	Integer
Start Current (mA)	0	-21	20	Milliamps
End Position	31	2	31	Integer
End Current (mA)	19	-21	20	Milliamps
Validation Time (ms)	0	0	65000	Milliseconds
Validation Dead Band %	0	0	100	Percentage

Table 5-14 – AI TAP Channel Specific Settings

AI TAP Specific Object Parameters: None

5.2.8 Digital Input Module (DIM) Object

5.2.8.1 DIM Description

User Administration “EditProject” must be ☑ set.

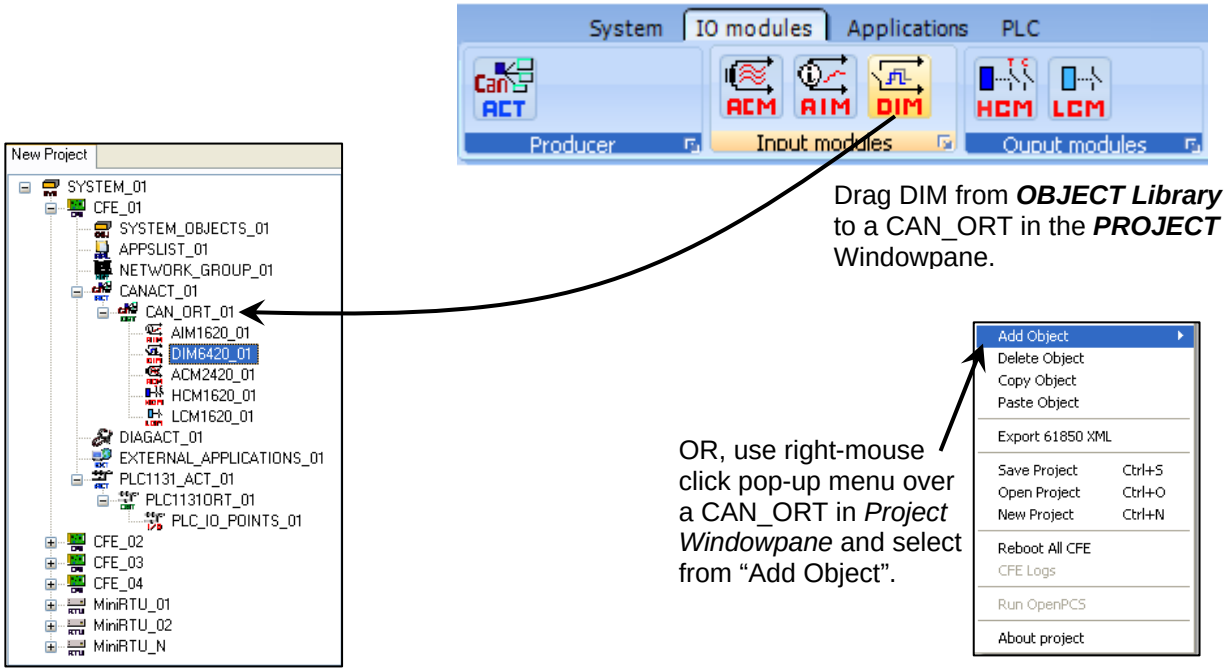
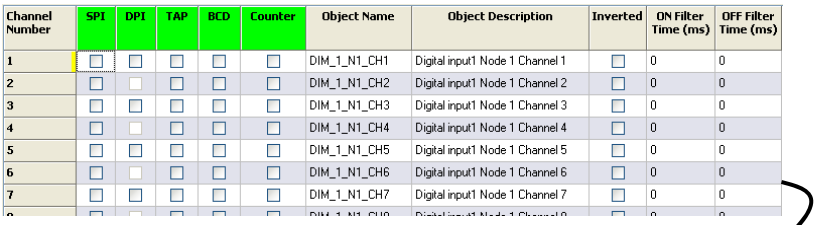


Figure 5-10 – Add DIM object from Object Library to Project Windowpane



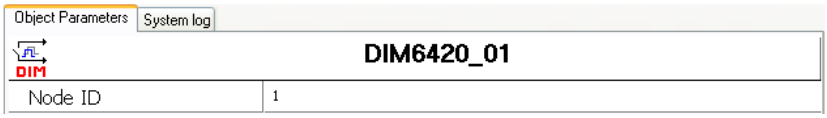
Channel Number	SPI	DPI	TAP	BCD	Counter	Object Name	Object Description	Inverted	ON Filter Time (ms)	OFF Filter Time (ms)
1	☐	☐	☐	☐	☐	DIM_1_N1_CH1	Digital input1 Node 1 Channel 1	☐	0	0
2	☐	☐	☐	☐	☐	DIM_1_N1_CH2	Digital input1 Node 1 Channel 2	☐	0	0
3	☐	☐	☐	☐	☐	DIM_1_N1_CH3	Digital input1 Node 1 Channel 3	☐	0	0
4	☐	☐	☐	☐	☐	DIM_1_N1_CH4	Digital input1 Node 1 Channel 4	☐	0	0
5	☐	☐	☐	☐	☐	DIM_1_N1_CH5	Digital input1 Node 1 Channel 5	☐	0	0
6	☐	☐	☐	☐	☐	DIM_1_N1_CH6	Digital input1 Node 1 Channel 6	☐	0	0
7	☐	☐	☐	☐	☐	DIM_1_N1_CH7	Digital input1 Node 1 Channel 7	☐	0	0

5.2.8.2 *DIM Common Settings*

DIM Channel Setting:	Default	Min	Max	Units
SPI	No Tick ☐	No Tick ☐	Tick ☑	Tick Box ☐ or ☑
DPI	No Tick ☐	No Tick ☐	Tick ☑	Tick Box ☐ or ☑
TAP	No Tick ☐	No Tick ☐	Tick ☑	Tick Box ☐ or ☑
BCD	No Tick ☐	1 BCD = 4-5 ☑	7 BCD = 28-29 ☑	Tick/Dialog
Counter	No Tick ☐	No Tick ☐	Tick ☑	Tick Box ☐ or ☑
Object Name	DIM_#_N#_CH#			Text
Object Description	Digital input Node# Channel#			Text
	27	0	64	
Inverted	Inverts signal state for negative logic.			Tick Box ☐ or ☑
	No Tick ☐	No Tick ☐	Tick ☑	
ON Filter Time	The validation times that the input must be in the ON state before the transition is accepted as valid.			Milliseconds
	0	0	60000	
OFF Filter Time	The validation times that the input must be in the OFF state before the transition is accepted as valid.			Milliseconds
	0	0	60000	

Table 5-15 – DIM Common Settings

5.2.8.3 *DIM Common Parameters*



DIM Object Parameters:	Default	Min	Max	Description
Node ID	1	1	15	Identification of I/O Module set in hardware. See "Node ID Configuration using the DSP-10" section [Reference 3].
Node Description	1 Node 1 Description	0	64	Text Characters

Table 5-16 – DIM Common Parameters

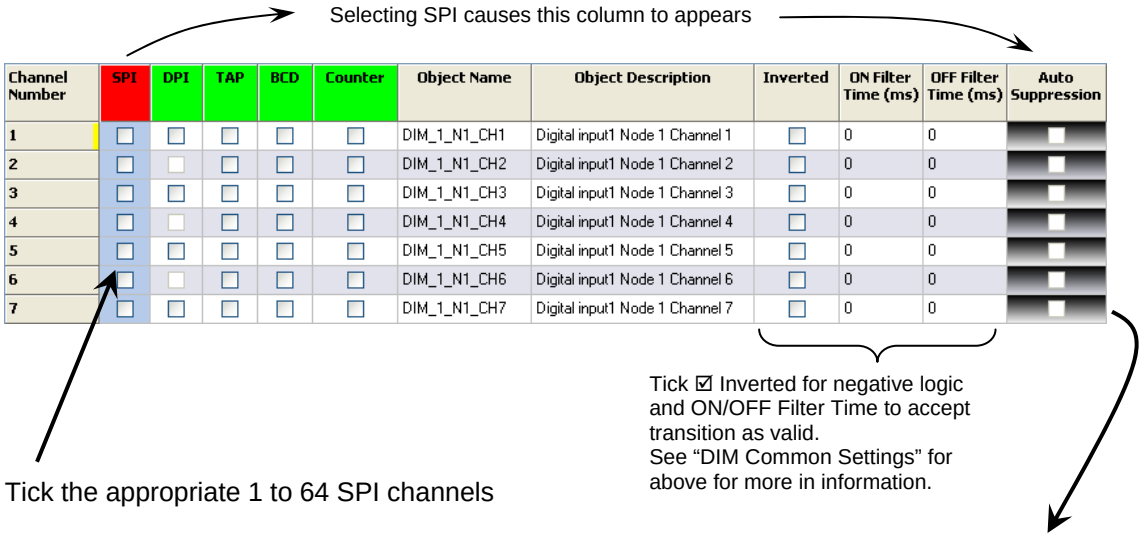
5.2.8.4 *Digital Input Module SPI, DPI, TAP, BCD, and Counter Input Channels*

User Administration "PasteProject" must be ☑ set.

The field termination Digital Input Module (DIM) is fully integrated in the unit. It has disconnect switches and test points for all input channels. A total of 64 input channels can be configured as:

- Single (SPI below) or Double Point Inputs (DPI) with adjustable ON/OFF filter time, inverse logic and automatic suppression options
- Transformer TAP Position Inputs with a maximum of 64 TAP positions
- BCD Inputs configurable from 1 to 7 digits and strobe/timer trigger option
- Rising edge (Type A) or Rising & falling edge (Type B) Counters with configuration option for cyclic or polled reporting

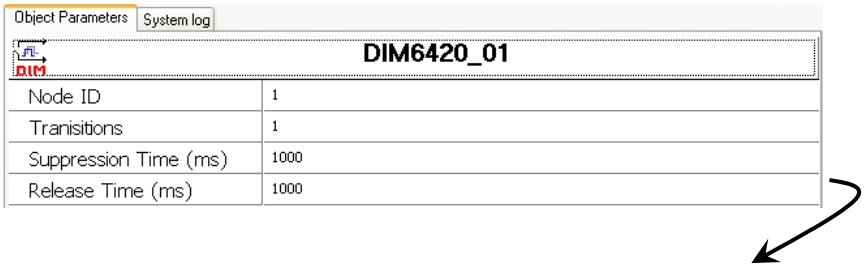
5.2.8.4.1 DIM SPI (Single Digital Input) Specific Settings


Selecting SPI causes this column to appears
Channel Number
SPI
DPI
TAP
BCD
Counter
Object Name
Object Description
Inverted
ON Filter Time (ms)
OFF Filter Time (ms)
Auto Suppression
1 DIM_1_N1_CH1 Digital input1 Node 1 Channel 1 0 0
2 DIM_1_N1_CH2 Digital input1 Node 1 Channel 2 0 0
3 DIM_1_N1_CH3 Digital input1 Node 1 Channel 3 0 0
4 DIM_1_N1_CH4 Digital input1 Node 1 Channel 4 0 0
5 DIM_1_N1_CH5 Digital input1 Node 1 Channel 5 0 0
6 DIM_1_N1_CH6 Digital input1 Node 1 Channel 6 0 0
7 DIM_1_N1_CH7 Digital input1 Node 1 Channel 7 0 0
Tick ☑ Inverted for negative logic and ON/OFF Filter Time to accept transition as valid.
See "DIM Common Settings" for above for more in information.
Tick the appropriate 1 to 64 SPI channels

SPI Specific Setting:	Description Default Minimum Maximum	Units
Auto Suppression	When ticked ☑, Auto Suppression stops false readings (of jitter) less than configurable Parameter Suppression Time and Release Time. No Tick ☐ No Tick ☐ Tick ☑	Tick Box ☐ or ☑

Table 5-17 – DIM SPI Specific Settings

SPI Specific Object Parameters:



SPI Object Parameters:	Description Default	Minimum	Maximum	Units
Node ID	Identification of I/O Module set in hardware. See "Node ID Configuration using the DSP-10" section [Reference 3].			
	1	1	15	integer
Transitions	The first 0-1-transition of a signal starts the control according to Automatic Suppression. The channel starts counting the transitions and the end of suppression window is calculated. If the counter reaches the number of configured transitions and the end of suppression windows is not reached, the channel will be suppressed.			
	1	1	255	integer
Suppression Time	If Auto Suppression Setting Ticked ☑ then this is, the amount of time required to acknowledge a valid signal.			
	1000	0	18000	Milliseconds by 1000's
Release Time	If Auto Suppression Setting Ticked ☑ then this is, the amount of time required after a signal to read the next valid signal. The release window starts if no further transition is detected. Each new transition will restart the release window again.			
	1000	0	18000	Milliseconds By 1000's
Node Description	1 Node 1 Description	0	64	Text Characters

Table 5-18 – DIM SPI Specific Parameters

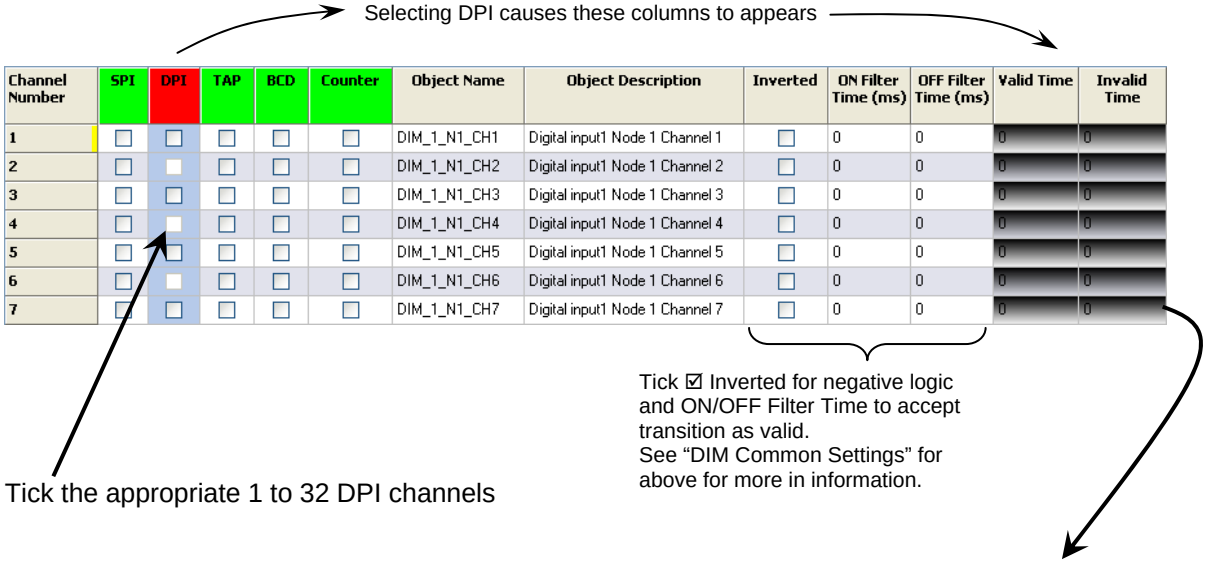
5.2.8.4.2 DIM DPI (Double Digital Input) Specific Settings

The valid and normal initial start-up condition of Double Digital Inputs is 01 or 10.

If the initial start-up condition is 00 then a change of state must occur within the allotted “Invalid Time” Setting. It is then recorded as Valid. If the initial start-up condition of 00 does no change state within the allotted “Invalid Time” Setting then it is recorded as Invalid.

If the start-up condition is 11 the input is reported as “invalid” immediately.

00	Valid data only if changes within allotted “Invalid Time” Object Setting
01	Valid DDI data
10	Valid DDI data
11	Reported as Invalid data immediately


Selecting DPI causes these columns to appears
Channel Number
SPI
DPI
TAP
BCD
Counter
Object Name
Object Description
Inverted
ON Filter Time (ms)
OFF Filter Time (ms)
Valid Time
Invalid Time
1 DIM_1_N1_CH1 Digital input1 Node 1 Channel 1
2 DIM_1_N1_CH2 Digital input1 Node 1 Channel 2
3 DIM_1_N1_CH3 Digital input1 Node 1 Channel 3
4 DIM_1_N1_CH4 Digital input1 Node 1 Channel 4
5 DIM_1_N1_CH5 Digital input1 Node 1 Channel 5
6 DIM_1_N1_CH6 Digital input1 Node 1 Channel 6
7 DIM_1_N1_CH7 Digital input1 Node 1 Channel 7
Tick ☑ Inverted for negative logic and ON/OFF Filter Time to accept transition as valid.
See “DIM Common Settings” for above for more in information.
Tick the appropriate 1 to 32 DPI channels

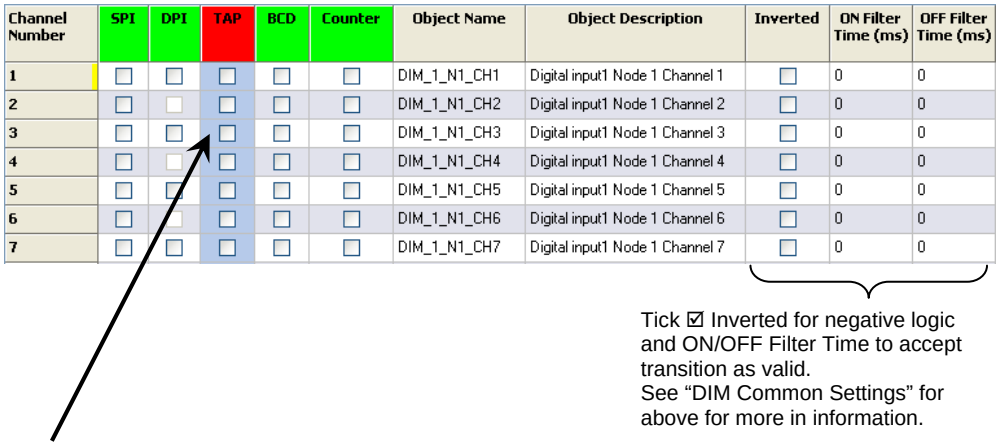
DPI Specific Setting:	Description Default Minimum Maximum	Units
Valid Time	Minimum amount of time allotted for DDI to be in the Valid “01” or “10” states 0 0 1000	Milliseconds
Invalid Time	Maximum amount of time allotted for DDI to be in the “00” illegal state. 0 0 1000	Milliseconds

Table 5-19 – DIM DPI Specific Settings

DPI Specific Object Parameters:

Node Description	1 Node 1 Description	0	64	Text Characters

5.2.8.4.3 DIM TAP (transformer binary tap position) Specific Settings



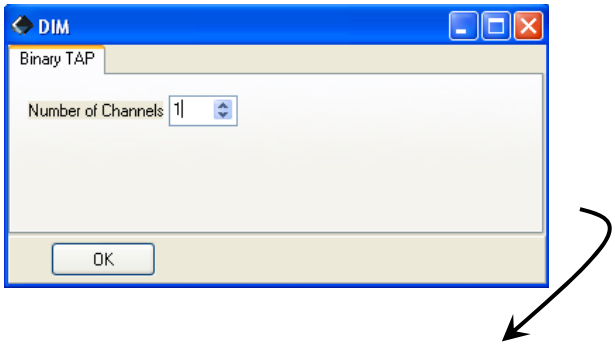
Channel Number	SPI	DPI	TAP	BCD	Counter	Object Name	Object Description	Inverted	ON Filter Time (ms)	OFF Filter Time (ms)
1	☐	☐	☐	☐	☐	DIM_1_N1_CH1	Digital input1 Node 1 Channel 1	☐	0	0
2	☐	☐	☐	☐	☐	DIM_1_N1_CH2	Digital input1 Node 1 Channel 2	☐	0	0
3	☐	☐	☐	☐	☐	DIM_1_N1_CH3	Digital input1 Node 1 Channel 3	☐	0	0
4	☐	☐	☐	☐	☐	DIM_1_N1_CH4	Digital input1 Node 1 Channel 4	☐	0	0
5	☐	☐	☐	☐	☐	DIM_1_N1_CH5	Digital input1 Node 1 Channel 5	☐	0	0
6	☐	☐	☐	☐	☐	DIM_1_N1_CH6	Digital input1 Node 1 Channel 6	☐	0	0
7	☐	☐	☐	☐	☐	DIM_1_N1_CH7	Digital input1 Node 1 Channel 7	☐	0	0

Tick ☑ Inverted for negative logic and ON/OFF Filter Time to accept transition as valid.
See "DIM Common Settings" for above for more in information.

Tick the appropriate TAP channels and a TAP dialog box will appear:

Next, choose the appropriate Number of 1 to 64 TAP channels.

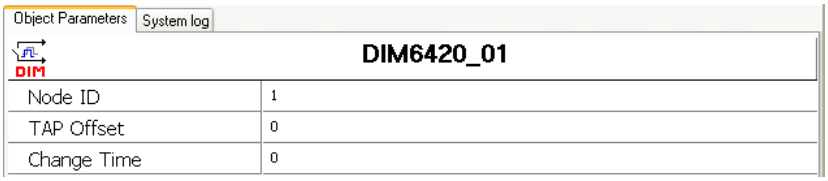
Only one input channel can be active at a time for a valid tap position. If more than one input is active then there must be a fault with the equipment and the tap position reading is reported as Invalid.



TAP Specific Setting:	Description Default	Minimum	Maximum	Units
Number of Channels	1	1	64	integer

Table 5-20 – DIM TAP Specific Settings

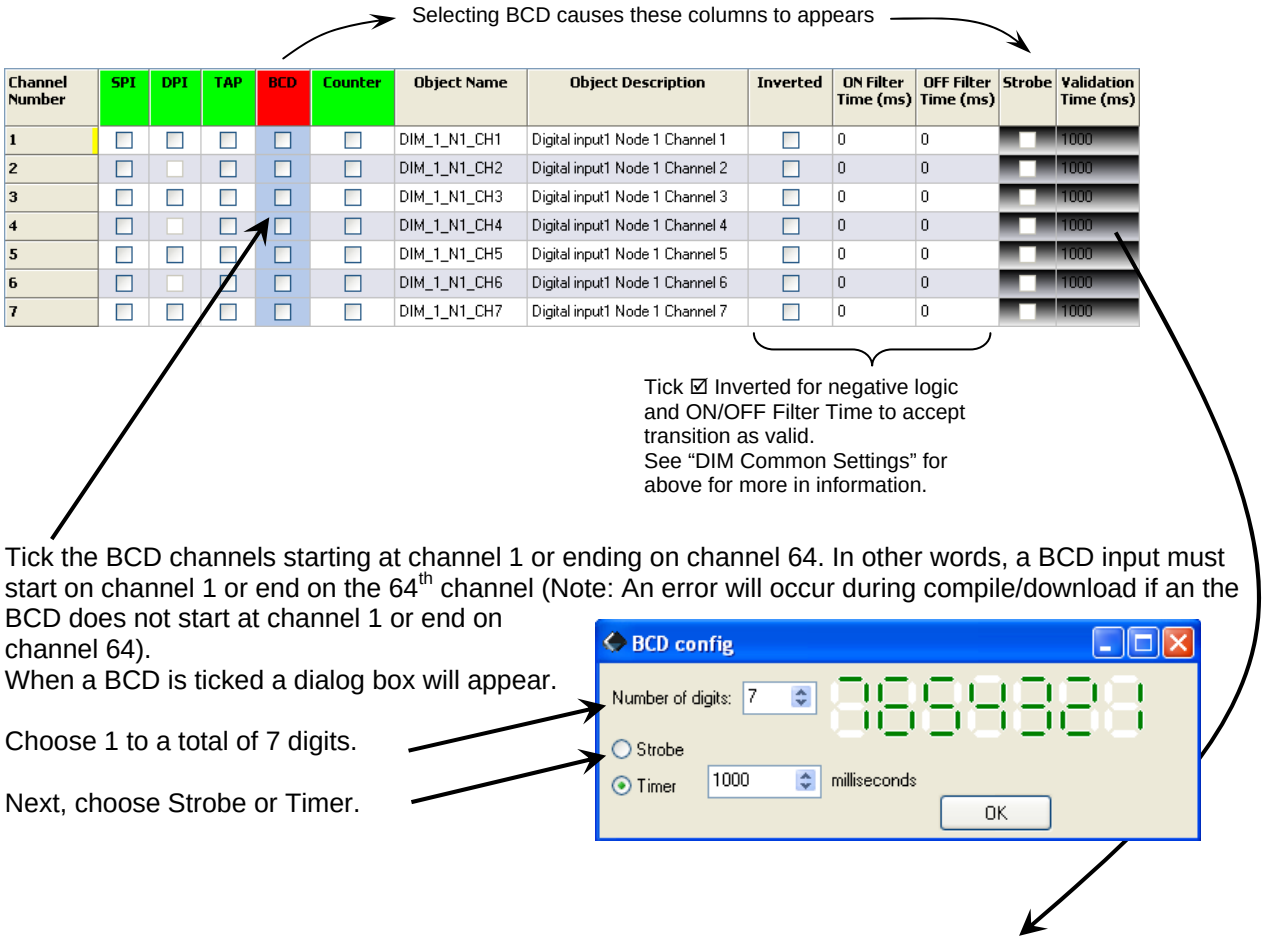
TAP Specific Object Parameters:



TAP Object Parameters:	Description Default	Min	Max	Units
TAP Offset	An offset value for a double-wound transformer. 0	-63	0	integer
Change Time	Amount of time required before next signal. 0	0	60000	Milliseconds
Node Description	1 Node 1 Description	0	64	Text Characters

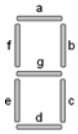
Table 5-21 – DIM TAP Specific Parameters

5.2.8.4.4 DIM BCD (Binary Coded Decimal) Specific Settings


Selecting BCD causes these columns to appears
Channel Number
SPI
DPI
TAP
BCD
Counter
Object Name
Object Description
Inverted
ON Filter Time (ms)
OFF Filter Time (ms)
Strobe
Validation Time (ms)
1 DIM_1_N1_CH1 Digital input1 Node 1 Channel 1 0 0 1000
2 DIM_1_N1_CH2 Digital input1 Node 1 Channel 2 0 0 1000
3 DIM_1_N1_CH3 Digital input1 Node 1 Channel 3 0 0 1000
4 DIM_1_N1_CH4 Digital input1 Node 1 Channel 4 0 0 1000
5 DIM_1_N1_CH5 Digital input1 Node 1 Channel 5 0 0 1000
6 DIM_1_N1_CH6 Digital input1 Node 1 Channel 6 0 0 1000
7 DIM_1_N1_CH7 Digital input1 Node 1 Channel 7 0 0 1000
Tick ☑ Inverted for negative logic and ON/OFF Filter Time to accept transition as valid.
See "DIM Common Settings" for above for more in information.
Tick the BCD channels starting at channel 1 or ending on channel 64. In other words, a BCD input must start on channel 1 or end on the 64th channel (Note: An error will occur during compile/download if an the BCD does not start at channel 1 or end on channel 64).
When a BCD is ticked a dialog box will appear.
Choose 1 to a total of 7 digits.
Next, choose Strobe or Timer.
BCD config
Number of digits: 7
Strobe
Timer
1000
milliseconds
OK

BCD Specific Setting:	Description Default	Minimum	Maximum	Units
Number of digits	1	1	7	Integer
Strobe	Strobe radio button in dialog box causes a tick ☑ mark on column to display which channel is the Strobe.			Button and Tick display
Timer	1000	1000	60000	Milliseconds
Validation Time	1000	1000	1000	Milliseconds

Table 5-22 – DIM BCD Specific Settings



The intended application of the BCD digital input module is to hardwire directly to the encoded to Binary Coded Decimal (BCD) driving the 7 segments of a seven-segment display(s).

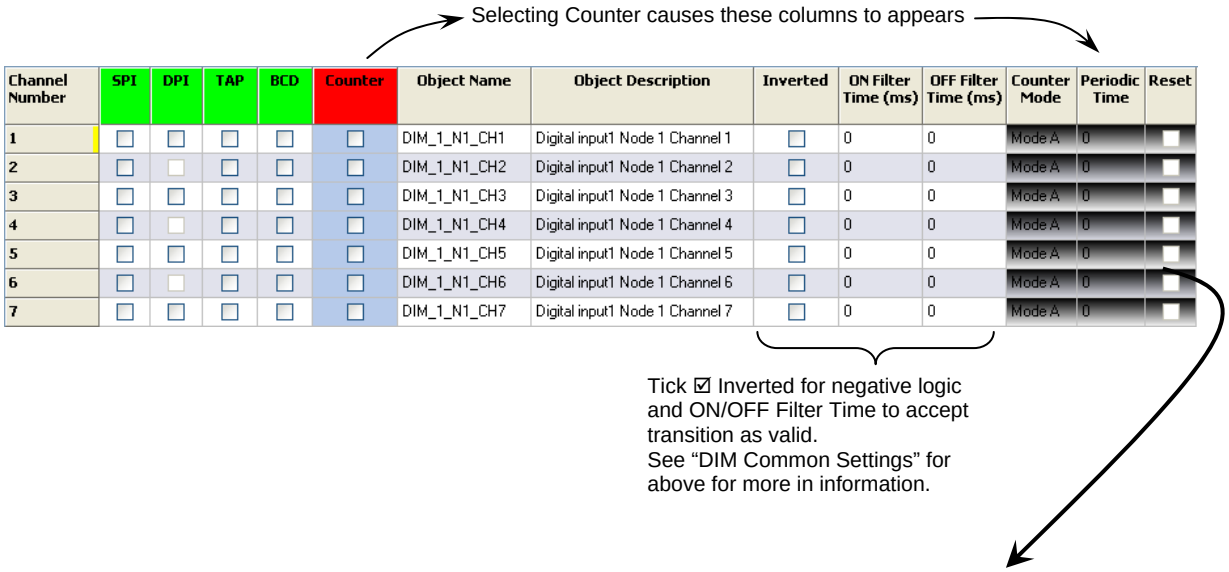
Hexa-decimal	7-Segment Display Segments							Encoded 7-Segment Binary Bits				WebCAN Data	WebCAN Status
	a	**b**	**c**	**d**	**e**	**f**	**g**	**D**	**C**	**B**	**A**		
0	1	1	1	1	1	1	0	0	0	0	0	0	OK
1	0	1	1	0	0	0	0	0	0	0	1	1	OK
2	1	1	0	1	1	0	1	0	0	1	0	2	OK
3	1	1	1	1	0	0	1	0	0	1	1	3	OK
4	0	1	1	0	0	1	1	0	1	0	0	4	OK
5	1	0	1	1	0	1	1	0	1	0	1	5	OK
6	1	0	1	1	1	1	1	0	1	1	0	6	OK
7	1	1	1	0	0	0	0	0	1	1	1	7	OK
8	1	1	1	1	1	1	1	1	0	0	0	8	OK
9	1	1	1	1	0	1	1	1	0	0	1	9	OK
a	1	1	1	1	1	0	1	1	0	1	0	10	IV
b	0	0	1	1	1	1	1	1	0	1	1	11	IV
C	1	0	0	1	1	1	0	1	1	0	0	12	IV
d	0	1	1	1	1	0	1	1	1	0	1	13	IV
E	1	0	0	1	1	1	1	1	1	1	0	14	IV
F	1	0	0	0	1	1	1	1	1	1	1	15	IV

Table 5-23 – DIM BCD 7-Segment Display Truth Table

BCD Specific Object Parameters:

Node Description	1 Node 1 Description	0	64	Text Characters

5.2.8.4.5 DIM Counter (Accumulator) Specific Settings


Selecting Counter causes these columns to appears
Channel Number
SPI
DPI
TAP
BCD
Counter
Object Name
Object Description
Inverted
ON Filter Time (ms)
OFF Filter Time (ms)
Counter Mode
Periodic Time
Reset
1 DIM_1_N1_CH1 Digital input1 Node 1 Channel 1 0 0 Mode A 0
2 DIM_1_N1_CH2 Digital input1 Node 1 Channel 2 0 0 Mode A 0
3 DIM_1_N1_CH3 Digital input1 Node 1 Channel 3 0 0 Mode A 0
4 DIM_1_N1_CH4 Digital input1 Node 1 Channel 4 0 0 Mode A 0
5 DIM_1_N1_CH5 Digital input1 Node 1 Channel 5 0 0 Mode A 0
6 DIM_1_N1_CH6 Digital input1 Node 1 Channel 6 0 0 Mode A 0
7 DIM_1_N1_CH7 Digital input1 Node 1 Channel 7 0 0 Mode A 0
Tick ☑ Inverted for negative logic and ON/OFF Filter Time to accept transition as valid.
See "DIM Common Settings" for above for more in information.

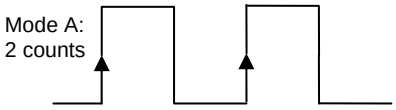
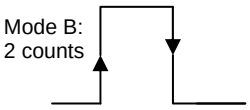
Counter Specific Setting:	Description Default	Minimum	Maximum	Units
Counter Mode	Accumulate rising-edges only.  Accumulate both the rising and falling edges  Mode A	Mode A: 2 counts Mode B: 2 counts Mode A	Mode B	Menu select 2 Modes
Periodic Time	Periodic Time specifies the amount of time to accumulate the signal transitions before reporting the count. No accumulation readings occur if Periodic Time = 0 ms.	0	65000	Milliseconds
Reset	When ticked ☑ the accumulator reports its total, the accumulator is reset to zero	No Tick ☐	Ticked ☑	Tick Box ☐ or ☑

Table 5-24 – DIM Counter Specific Settings

Counter Specific Object Parameters:

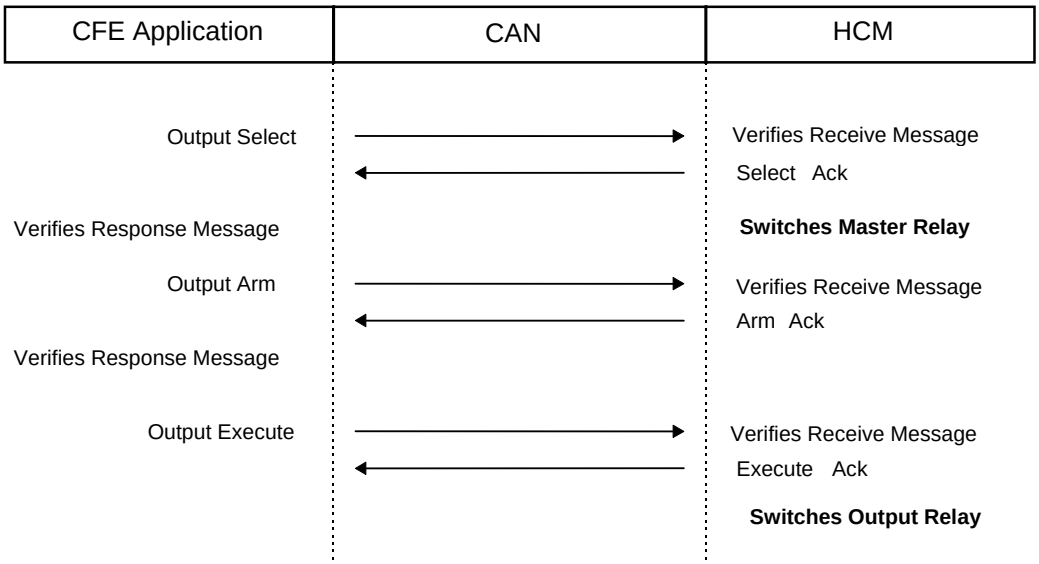
Node Description	1 Node 1 Description	0	64	Text Characters

5.2.9 High Current Output Module (HCM) Object

5.2.9.1 *HCM Description*

The Digital Current Output Module (HCM) supports controlled outputs. The output channels are subdivided in 8 channels for “Trip” and for “Close” outputs. Either “Trip” or “Close” output is activated at any one time. The operation method for this controlled output is called “three stage commands”. Regardless of whether “Trip” or “Close”, only one HCM output is activated at any one time with the exception of “Load shedding”, an Object Parameter.

Software Security
For secure software operation a three-stage command (Select, Arm and Execute) is used for operating a controlled output. Each step of the sequence must receive a positive response from the actual output driver before the next step may begin. Only if all three stages are completed and the data contained in each stage is consistent is the output actually activated. Any inconsistencies in the stages will result in the control output sequence being aborted. At each step there is a pre-configured timeout initiated. If a response is not received within the timeout period then the response is assumed to be negative and the control output sequence aborted and cleared down. The flow chart below shows a three-stage-command.



Hardware Security
The hardware for the controlled outputs supports the Select-Arm-Execute concept with read-back verification. The master contact is closed at the “Arm” stage. After switching a master relay the weld monitor becomes active. The contact weld monitor and the read-back verification are used to check that the digital output card circuitry is operational. If the contact weld monitor is active then the HCM is functional (i.e. no welding of a contact). The command CAN response an acknowledge (ACK) and the next stage can be performed.

If the contact weld monitor is passive one of the contacts is welded and the opto-coupler of the monitor does not switch (it is short linked by the welded contact). In this case, the master relay is de-energized immediately and error message (NACK) occurs.

It is only at the “Execute” stage that power is actually applied to the contacts by activating the selected output relays.

User Administration “EditProject” must be ☑ set.

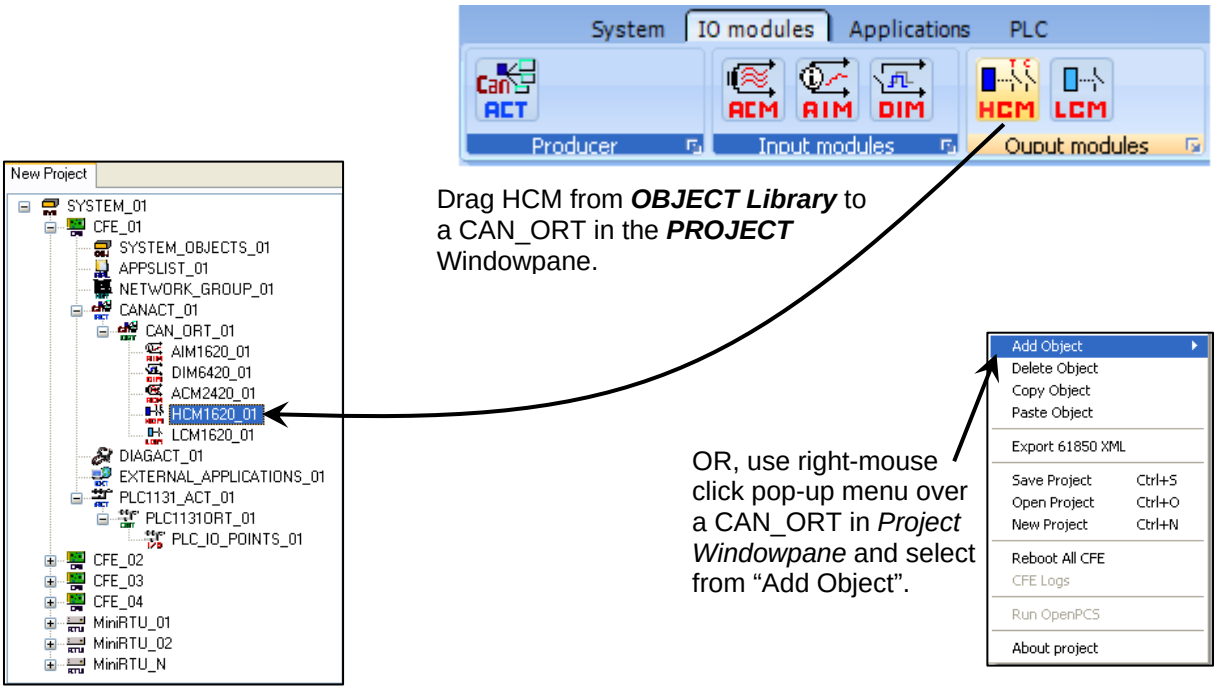


Figure 5-11 – Add HCM object from Object Library to Project Windowpane

5.2.9.2 *HCM Settings*

HCM Channel Settings:	Default	Min	Max	Units
Controlled	No Tick ☐	No Tick ☐	Tick ☑	Tick Box ☐ or ☑
Object Name	HCM_#_N#_CH#	1	32	Text Characters
Object Description	Digital output HC# Node# Channel#	0	64	Text Characters
Pulse Time	1000	0	60000	
Select with Value	Tick ☑	No Tick ☐	Tick ☑	Tick Box ☐ or ☑

Table 5-25 – HCM Settings

NOTE: All text characters must be uppercase, underscores "_", and numbers only. No Spaces, ".", "-", or special characters of any kind are allowed.

5.2.9.3 *HCM Parameters*

HCM Object Parameters:	Default	Min	Max	Description
Node ID	1	1	15	Identification of I/O Module set in hardware. See “Node ID Configuration using the DSP-10” section [Reference 3].
CPU ID	1	1	2	Identification of CPU.
Command Timeout	2000	0	32000	
Load Shedding	True ☑	False ☐	True ☑	Tick Box ☐ or ☑
Node Description	1 Node 1 Description	0	64	Text Characters

Table 5-26 – HCM Parameters

5.2.10 Low Current Output Module (LCM) Object

5.2.10.1 LCM Description

The Low Current Output Module (LCM) supports 16 output channels. Each of the channels can be configured as “Uncontrolled” or “Pulse Train” outputs. Controlled outputs are independently controlled relays. Pulse Train outputs Object Settings can configure the pulse width on and off as well as the number of pulses.

User Administration “EditProject” must be ☑ set.

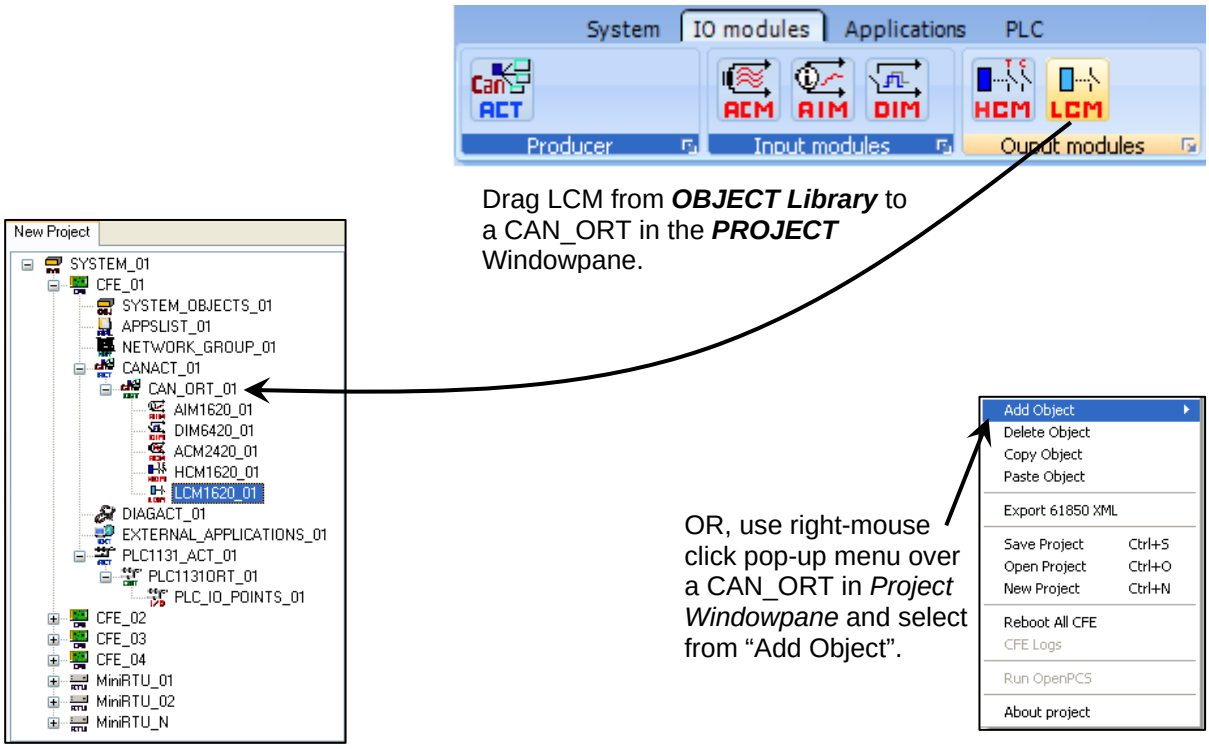


Figure 5-12 – Add LCM object from Object Library to Project Windowpane

5.2.10.2 LCM Settings

LCM Channel Settings:	Default	Min	Max	Units
UnControlled	No Tick ☐	No Tick ☐	Tick ☑	Tick Box ☐ or ☑
Pulse Train (R/L)	No Tick ☐	No Tick ☐	Tick ☑	Tick Box ☐ or ☑
Object Name	LCM_#_N#_CH#	1	32	Text Characters
Object Description	Digital Output LC# Node# Channel#	0	64	Text Characters
If Pulse Train ticked ☑: Pulse Time (ON)	1000	0	60000	Milliseconds
If Pulse Train ticked ☑: Pulse Time (OFF)	0	0	60000	Milliseconds
If Pulse Train ticked ☑: Pulse Count	1	0	255	Milliseconds

Table 5-27 – LCM Settings

NOTE: All text characters must be uppercase, underscores "_", and numbers only. No Spaces, ".", "-", or special characters of any kind are allowed.

5.2.10.3 *LCM Parameters*

LCM Object Parameters:	Default	Min	Max	Description
Node ID	1	1	15	Identification of I/O Module set in hardware. See "Node ID Configuration using the DSP-10" section [Reference 3].
CPU ID	1	1	2	
Command Timeout	2000	0	32000	
Node Description	1 Node 1 Description	0	64	Text Characters

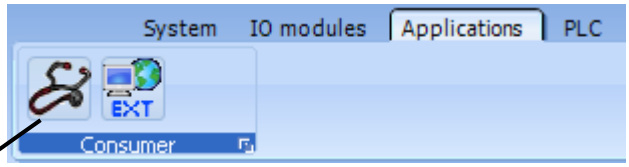
Table 5-28 – LCM Parameters

5.2.11 Diagnostic Object

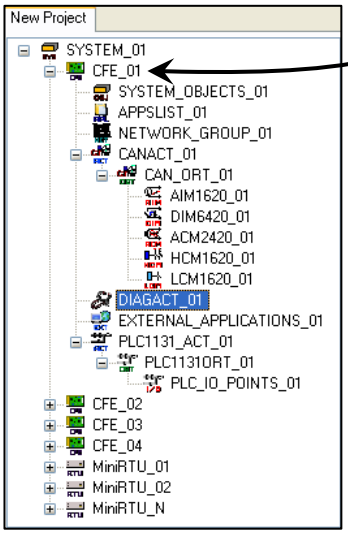
5.2.11.1 Diagnostic Description

User Administration “EditProject” must be ☑ set.

The diagnostic object must be placed in the CFE(s) to be able to run real-time System Diaganotics.



Drag Diagnostic from ***OBJECT Library*** to a CFE in the ***PROJECT*** Windowpane.



OR, use right-mouse click pop-up menu over a CFE in the *Project Windowpane* and select from “Add Object”.

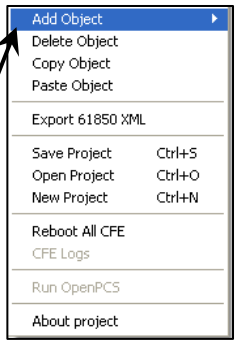


Figure 5-13 – Add Diagnostic object from Object Library to Project Windowpane

5.2.11.2 Diagnostic Settings

Diagnostic Settings:	Default	Min	Max	Units
Name	Diagnostic	1	32	Text Characters
Description		0	64	Text Characters
App Number	1	1	20	Integer – Automatically assigned
LED	LED B	A	D	Diagnostic LED on CFE panel
Diagnostic Port	3100	0	65000	Integer

Table 5-29 – Diagnostic Object Settings

NOTE: All text characters must be uppercase, underscores "_", and numbers only. No Spaces, ".", "-", or special characters of any kind are allowed.

5.2.11.3 Diagnostic Parameters

Diagnostic Object Parameters:	Default	Min	Max	Description
Application Enabled	True ☑	False ☐	True ☑	Tick Box ☐ or ☑

Table 5-30 – Diagnostic Object Parameters

5.2.12 External Application (EXT) Object

5.2.12.1 EXT Description

User Administration "EditProject" must be ☑ set.

This object is use for adding user-defined applications

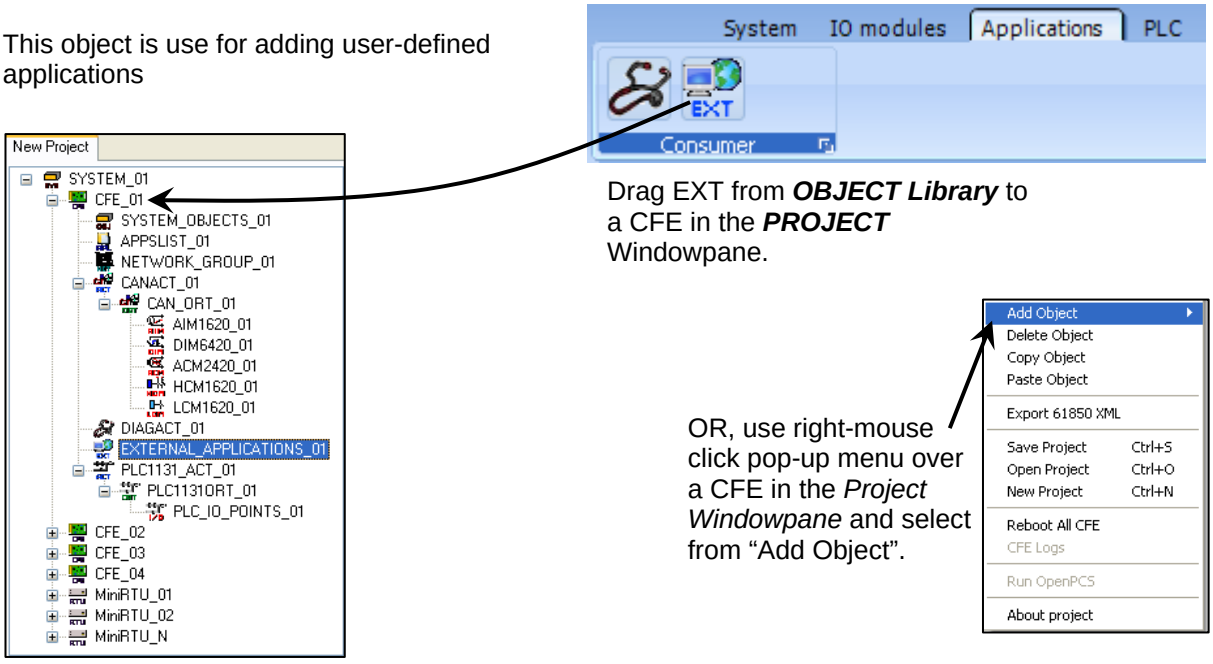


Figure 5-14 – Add EXT object from Object Library to Project Windowpane

5.2.12.2 EXT Settings

External App Settings:	Default	Min	Max	Units
Name	Ext App Name	1	32	Text Characters
Description	External Consumer Application	0	64	Text Characters
IP Address	192.168.1.1			Internet Address
App Number	1	1	20	Integer – Automatically assigned
Clock Sync Priority	0	0	50	Integer
LED	None	None	A, B, C, D	Ext LED

Table 5-31 – EXT Settings

NOTE: All text characters must be uppercase, underscores "_", and numbers only. No Spaces, ".", "-", or special characters of any kind are allowed.

5.2.12.3 EXT Parameters

EXT Object Parameters:	Default	Min	Max	Description
Application Enabled	True ☑	False ☐	True ☑	Tick Box ☐ or ☑

Table 5-32 – EXT Parameters

5.2.13 PLC Application Configuration Table (ACT) Object

5.2.13.1 PLC ACT Description

User Administration "EditProject" must be ☑ set.

This object is required to run SCADA PLC 61131 applications (e.g. OpenPCS projects).

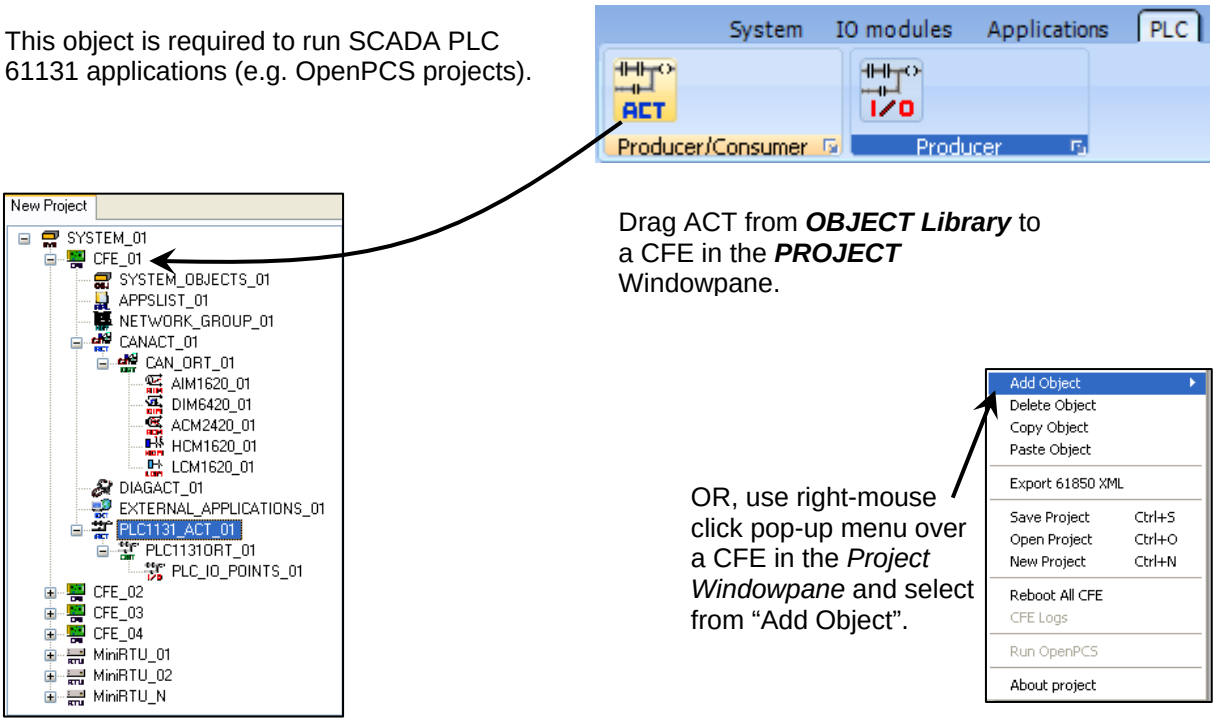


Figure 5-15 – Add ACT object for PLC from Object Library to Project Windowpane

5.2.13.2 PLC ACT Settings

PLC ACT Settings:	Default	Min	Max	Units
Name	PLC1131_1	1	32	Text Characters
Description	PLC 1131 Description	0	64	Text Characters
App Number	1	1	20	Integer – Automatically assigned
OpenPCS Port	8888	0	65000	Integer
LicKey	1	1 character	16 characters	OpenPCS Licence #
Command Timeout	10000	0	60000	Integer

Table 5-33 – PLCACT Settings

NOTE: All text characters must be uppercase, underscores "_", and numbers only. No Spaces, ".", "-", or special characters of any kind are allowed.

5.2.13.3 PLC ACT Parameters

PLCACT Object Parameters:	Default	Min	Max	Description
Application Enabled	True ☑	False ☐	True ☑	Tick Box ☐ or ☑

Table 5-34 – PLCACT Parameters

5.2.14 PLC Input/Output (I/O) Object

5.2.14.1 PLC IO Description

User Administration “EditProject” must be ☑ set.

This object is used to reference I/O in a PLC application.

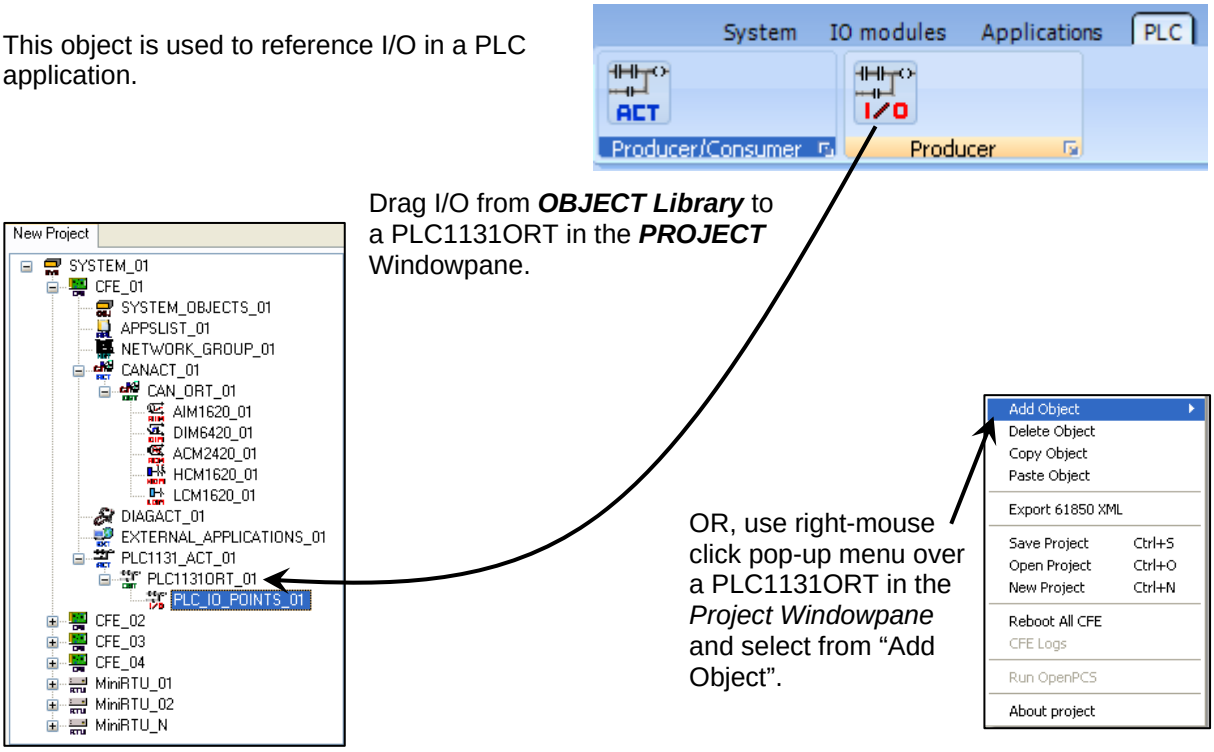


Figure 5-16 – Add I/O object for PLC from Object Library to Project Windowpane

5.2.14.2 PLC IO Settings

PLC IO Settings:	Description
Object Name	Reference lookup from other CFEs
Object Description	Reference lookup from other CFEs text
Data Type:	Single Point
	Double Point
	Unsigned Byte
	Signed Byte
	Unsigned Word
	Signed Word
	Unsigned Double Word
	Signed Double Word

Table 5-35 – PLC IO Settings

5.2.14.3 PLC IO Parameters (None)

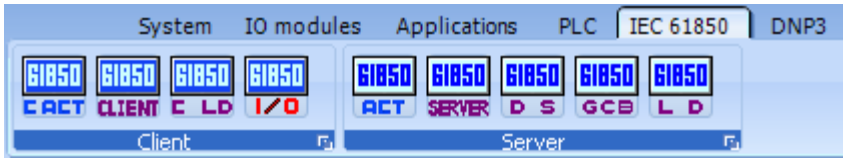
This OBJECT has no Parameters.

5.2.15 Protocol Client / Server Objects

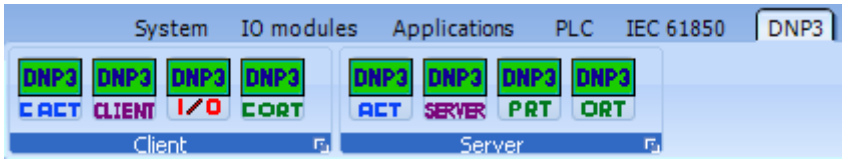
5.2.15.1 Protocol Description

User Administration “EditProject” must be ☑ set.

From the numerous protocols see the appropriate manuals. For example, see the IEC61850, DNP3, GPRS, IEC870-5-101 manuals.



These menu tabs are shown only if you have these protocols



5.2.15.2 Protocol Settings

Protocol Settings:	Default	Min	Max	Units
Name		1	32	Text Characters
Description		0	64	Text Characters
App Number	1	1	20	Integer – Automatically assigned
Clock Sync Priority	0	0	50	Integer
LED (Shows Protocol active)	NONE	NONE	A, B, C, or D	CFE LED on hardware panel

Table 5-36 – Protocol Settings

NOTE: All text characters must be uppercase, underscores "_", and numbers only. No Spaces, ".", "-", or special characters of any kind are allowed.

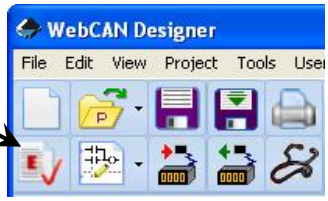
5.2.15.3 Protocol Parameters

Each protocol OBJECT may have their appropriate Parameters.

5.3 Compile and Download/Upload to/from the RTU, BCU, or DA RTU CFEs

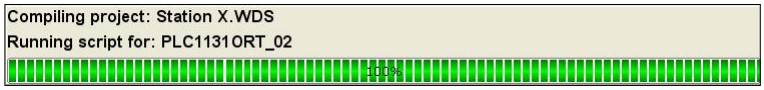
5.3.1 Compile (Design Check)

User Administration “CompileProject” must be ☑ set.



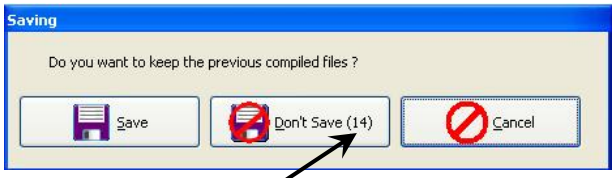
Compile does an error check of the design rules. This check builds a completed system of the entire project ready that can be saved for download.

Running a check may be done during the construction of the project at any time to check for errors.



During the compile, a running percentage of completion shows the progress of the design rule check.

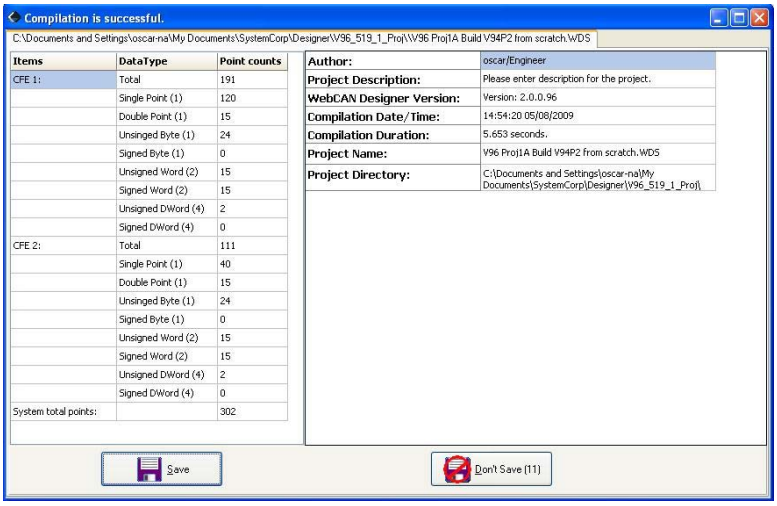
After starting the compile, the “Saving” dialog box appears to allowing the opportunity to save the present and previous checked design.



It will NOT save after 15 seconds if no action is selected. A countdown of the 15 seconds will be displayed.

If there are any errors then they are shown in the Alert Messages dialog box that appears in the lower-right corner of the WebCAN Designer Studio window. For example:

Once a design has been successfully compiled, a “Compilation is successful” dialog box will appear displaying design information:



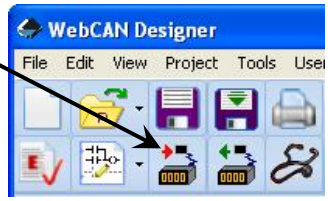
During the development process of the project, there may be numerous design iterations and compilations to check for errors. Thus, these intermediate versions may be saved or discarded.

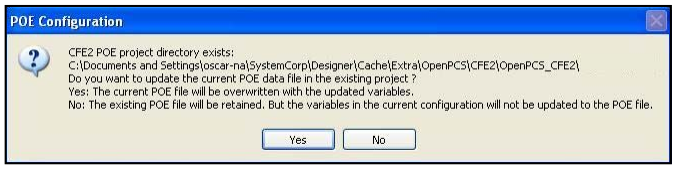
Figure 5-17 – Compile Dialog Box

It is always good practice to Save or Save As … the design occasionally.

5.3.2 Download

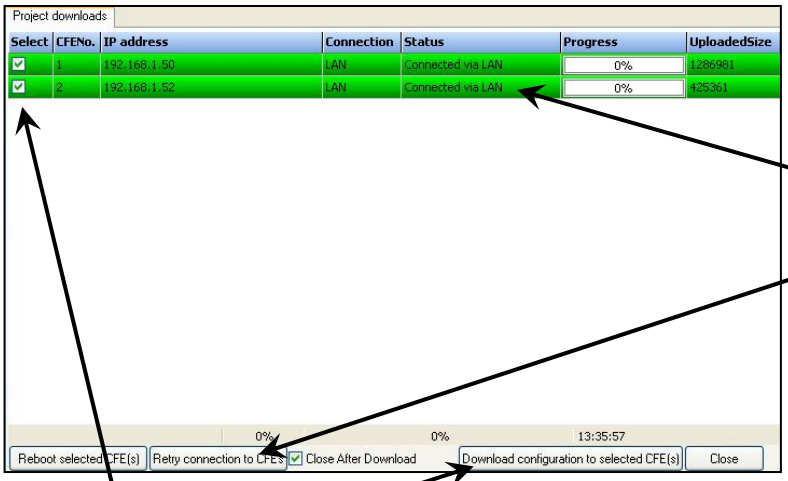
User Administration “DownloadProject” must be ☑ set.
If a design has not been compiled then the compilation is automatically executed prior to Download. View “Alert Messages” for design errors, if necessary.




POE Configuration
CFE2 POE project directory exists:
C:\Documents and Settings\oscar-na\SystemCorp\Designer\Cache\Extra\OpenPCS\CFE2\OpenPCS_CFE2\
Do you want to update the current POE data file in the existing project ?
Yes: The current POE file will be overwritten with the updated variables.
No: The existing POE file will be retained. But the variables in the current configuration will not be updated to the POE file.
Yes
No

← Only after a successful compilation the POE Configuration dialog box appears.
← Click “Yes” to pass the WDS Object Names to OpenPCS’s External Variables source code.

This “Project downloads” tab ONLY appears after all design errors have been check and corrected:

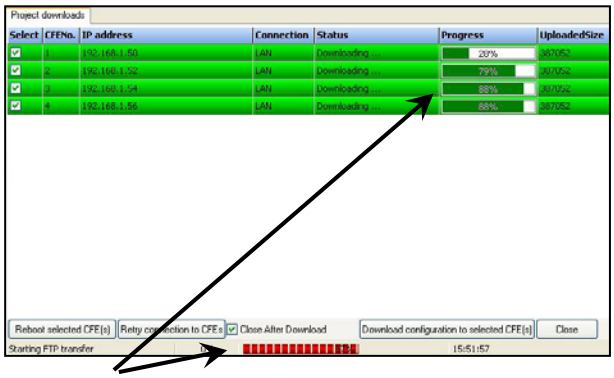

Project downloads
Select CFENo. IP address Connection Status Progress UploadedSize
1 192.168.1.50 LAN Connected via LAN 0% 1286981
2 192.168.1.52 LAN Connected via LAN 0% 425361
0% 0% 13:35:57
Reboot selected CFE(s)
Retry connection to CFE's
Close After Download
Download configuration to selected CFE(s)
Close

The connection to the CFE in the RTU, BCU, or DA RTU must be established prior to commencing a download. The status is shown to be “Connected” via LAN or USB, or may show “Failed to connect”. Check network cable “Retry connection”.

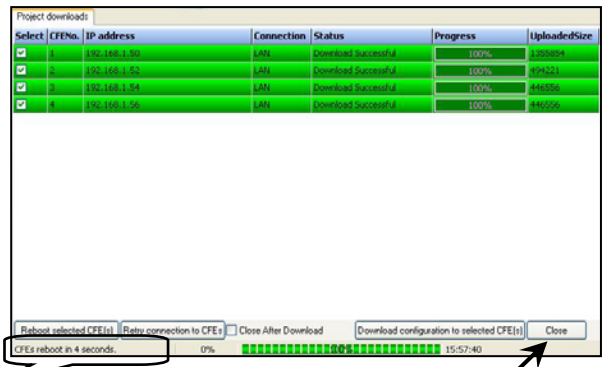
A successful compilation can be achieved but a failure to connect is possible if the IP address information simply does match the CFE’s actual address. Check the IP address information is correct as described in the CFE Parameters section.

Click “Download configuration to selected CFE(s)” button to download to the selected ☑ CFE’s. The hardware will automatically reboot after the download is successful. By ticking the “Close After Download” ☑ tick box will automatically close this windowpane tab when the CFE(s) starts to reboot.

Figure 5-18 – Download project to the CFE Hardware dialog box

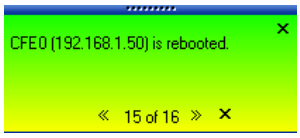


Progress is shown while WebCAN Designer Studio is downloading via FTP to the CFE hardware in parallel.



Once completed the progress bar will show 100% and a countdown to CFE(s) rebooting begins.

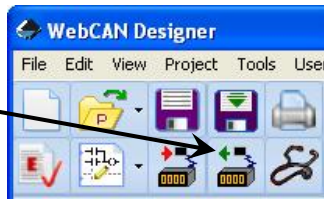
Canceling the reboot of the CFE(s) may be done prior to seeing the reboot message:



If the download tab is closed prior to the completion of the CFE reboot countdown, as shown in the lower-left corner of the windowpane, then the CFE(s) will NOT be rebooted.

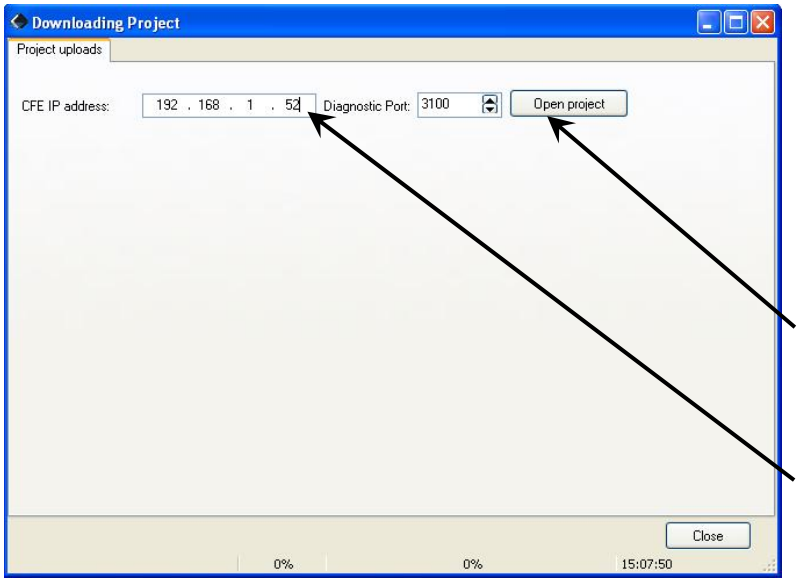
The complete the entire WebCAN Designer project is stored in the CFE’s flash memory.

5.3.3 *Upload*



User Administration “UploadProject” must be ☑ set.

Where Download copies the entire project to the CFE(s), Upload copies the entire project from the selected CFE.



When downloaded, the entire project is stored. Thus, by uploading a project the entire WebCAN Designer Studio project loaded in CFE hardware’s flash memory on the RTU, BCU, or DA RTU is re-loaded back into the WebCAN Designer Studio.

Insert the appropriate CFE IP address information and then click “Open project” button.

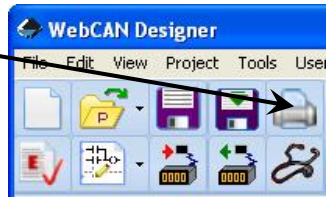
Available CFE IP addresses can be found using the CFE Information tool that displays CFE’s and their IP addresses on the network.

Figure 5-19 – Upload project from the CFE hardware dialog box

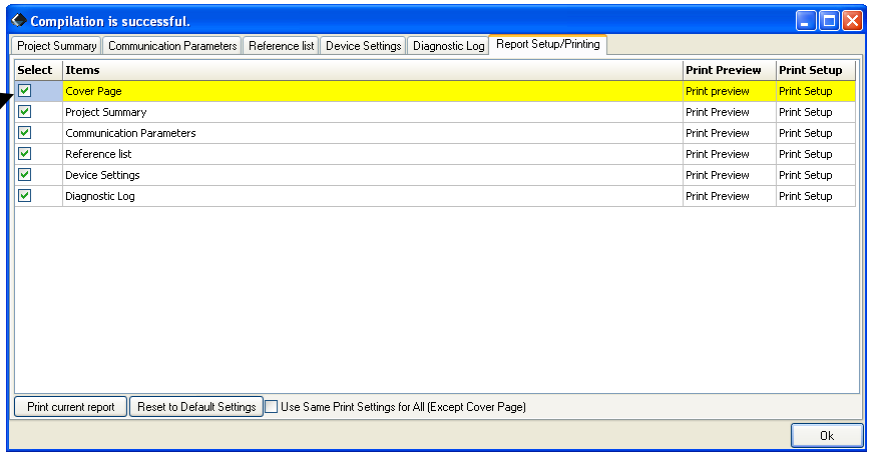
5.4 Print Project Report and Printing

5.4.1 Print Report

User Administration "Printing" must be ☑ set.



Print Report:
A compile (design check) is run for printing a report. In other words, the Print Report is a completed project design, free of errors. Printing individual tables does not require the design to be compiled.



← Compile must be successful.

← Information in report:

- Cover Page
- Project Summary
- Communication Parameters
- Reference List
- Device Settings
- Diagnostic Log

← Buttons & ☑ Tick Box

Figure 5-20 – Print Report Dialog box – Report Setup/Printing Tab

"Print current report" – Clicking this button will print the current report of only the ☑ selected pages.

"Reset to Default Settings" – Clicking this button will change all the Print Setup pages to the default.

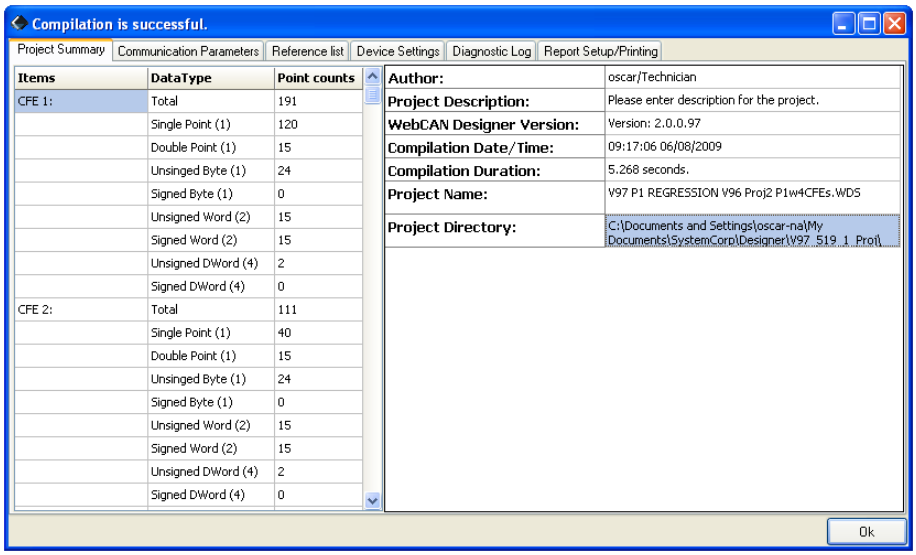
"☐ Use Same Print Settings for All (Except Cover Page)" – Ticking the ☑ tick box will automatically pop up the Print Setup dialog box to set all page Print Setup, except the Cover Page.

"Ok" – Click to exit this Report Setup/Printing dialog box.

The following pages define the tabs Project Summary, Communication Parameters, Reference list, Device Settings, and Diagnostic log information that will be part of the report. Each section can be reviewed view "Print Preview" and fonts, font style, header/footer information, etc. can be defined with "Print Setup".

Note that the preview shows only the report data information and a screen view print driver should be used (e.g. a PDF file creator) to view actually printout.

5.4.2 Project Summary

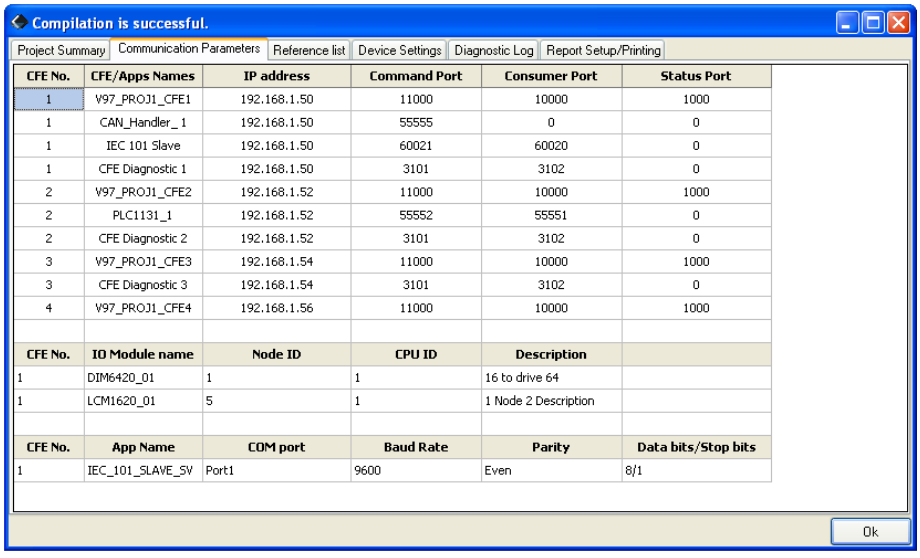


🡸 This is the information that is printed on the cover page.

All the Items (e.g. CFE 1, CFE 2) are listed in the Project Summary page of the report summarizing all the data types and total point count.

Figure 5-21 – Print Report Dialog box –Project Summary Tab

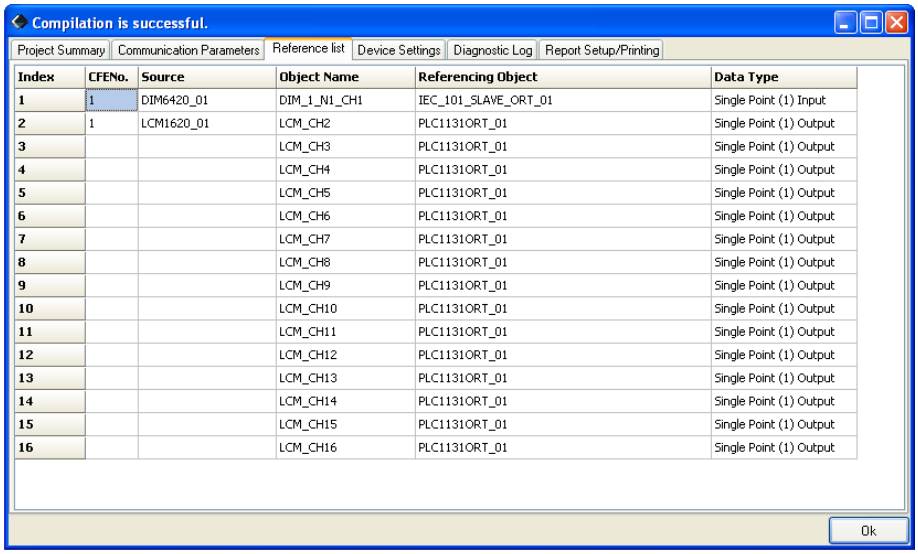
5.4.3 Communication Parameters



🡸 This tab shows the report page covering all the communication details such as all the CFE and application IP addresses, command, consumer, and status ports.

Figure 5-22 – Print Report Dialog box – Communications Parameters Tab

5.4.4 Reference List



Index	CFENo.	Source	Object Name	Referencing Object	Data Type
1	1	DIM6420_01	DIM_1_N1_CH1	IEC_101_SLAVE_ORT_01	Single Point (1) Input
2	1	LCM1620_01	LCM_CH2	PLC1131ORT_01	Single Point (1) Output
3			LCM_CH3	PLC1131ORT_01	Single Point (1) Output
4			LCM_CH4	PLC1131ORT_01	Single Point (1) Output
5			LCM_CH5	PLC1131ORT_01	Single Point (1) Output
6			LCM_CH6	PLC1131ORT_01	Single Point (1) Output
7			LCM_CH7	PLC1131ORT_01	Single Point (1) Output
8			LCM_CH8	PLC1131ORT_01	Single Point (1) Output
9			LCM_CH9	PLC1131ORT_01	Single Point (1) Output
10			LCM_CH10	PLC1131ORT_01	Single Point (1) Output
11			LCM_CH11	PLC1131ORT_01	Single Point (1) Output
12			LCM_CH12	PLC1131ORT_01	Single Point (1) Output
13			LCM_CH13	PLC1131ORT_01	Single Point (1) Output
14			LCM_CH14	PLC1131ORT_01	Single Point (1) Output
15			LCM_CH15	PLC1131ORT_01	Single Point (1) Output
16			LCM_CH16	PLC1131ORT_01	Single Point (1) Output

← This tab shows the report page covering all the Object reference names and data types.

Figure 5-23 – Print Report Dialog box – Reference List Tab

5.4.5 Device Settings

This tab defines what specific tables with settings and parameters are to be part of the report. Be default there are no devices selected (i.e. there are NO Device names listed on the right-hand side of this tab).

This tab defines and shows the report page covering selected Device Settings. ➔

To select devices:
1) Click on desired device, then

2) Click “Add>” button to add the device to the print report list.

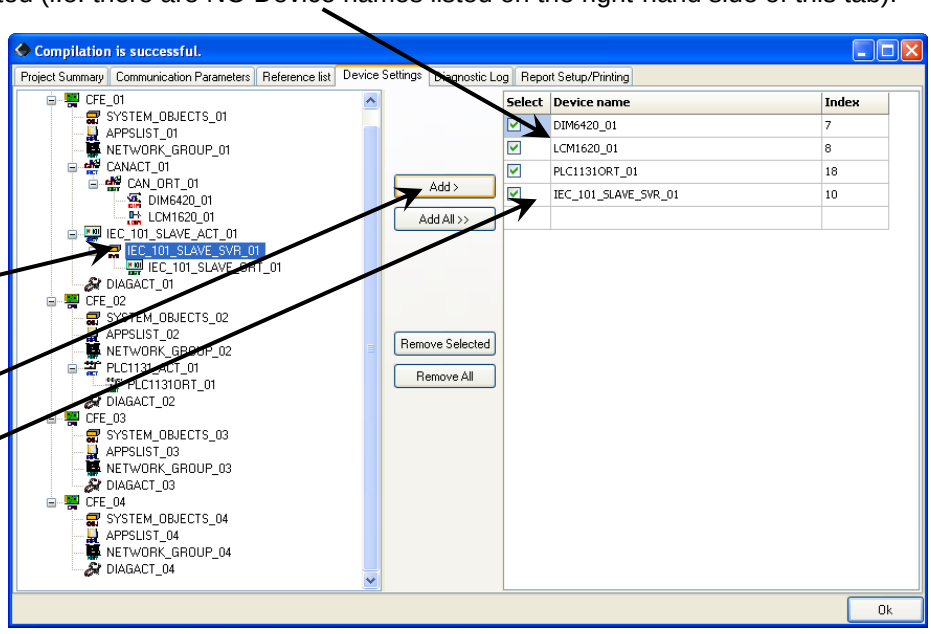


Figure 5-24 – Print Report Dialog box – Report Setup/Printing Tab

All devices may be added or removed and, ☑ “Select” items may also be removed.

Note: The selection of devices is ONLY available in the current WebCAN Designer Studio session and the selection is not saved to the project.

5.4.6 Diagnostic Log

This tab defines what information from a selected diagnostic log are to be part of the report. Furthermore, the selected log file events can be filtered as required.

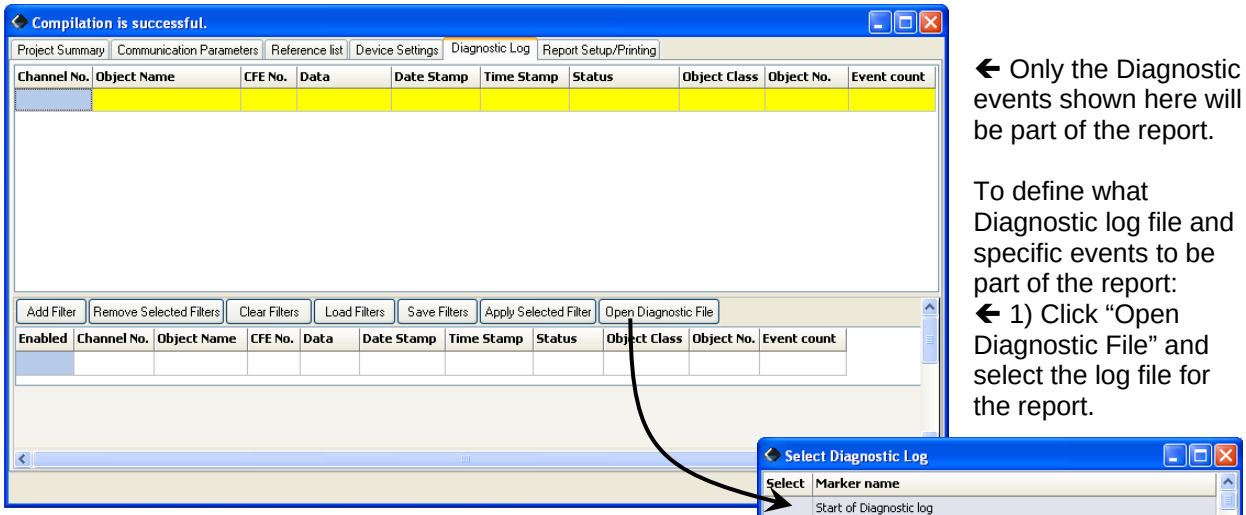


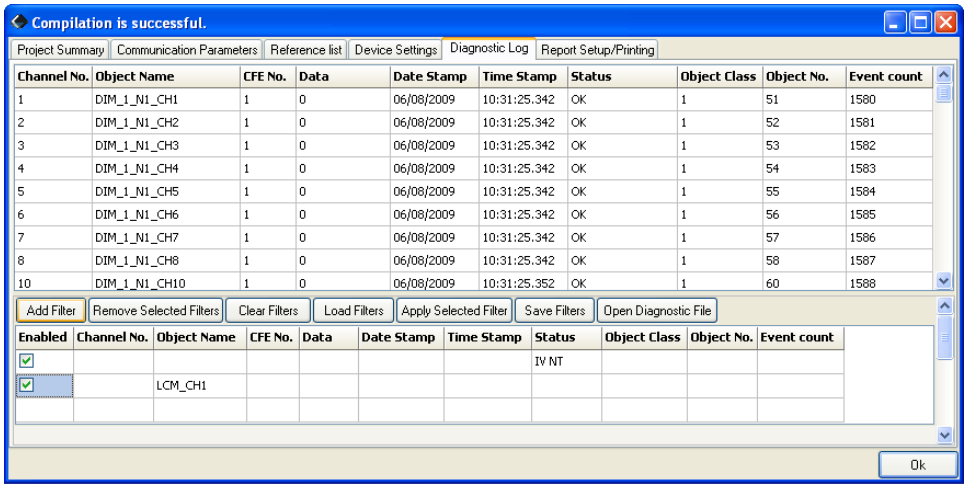
Figure 5-25 – Print Report Dialog box – Diagnostic Tab

← Only the Diagnostic events shown here will be part of the report.

To define what Diagnostic log file and specific events to be part of the report:
← 1) Click "Open Diagnostic File" and select the log file for the report.

2) After selecting the diagnostic log file, this dialog box will appear. Select ☑ the section of the log file to be part of report and then click "Ok".

Note that "Start of Diagnostic log" to the "End of "Diagnostic log" may be the only choices unless user defined Markers have been placed in the log file. Also see Diagnostic Section for more information.

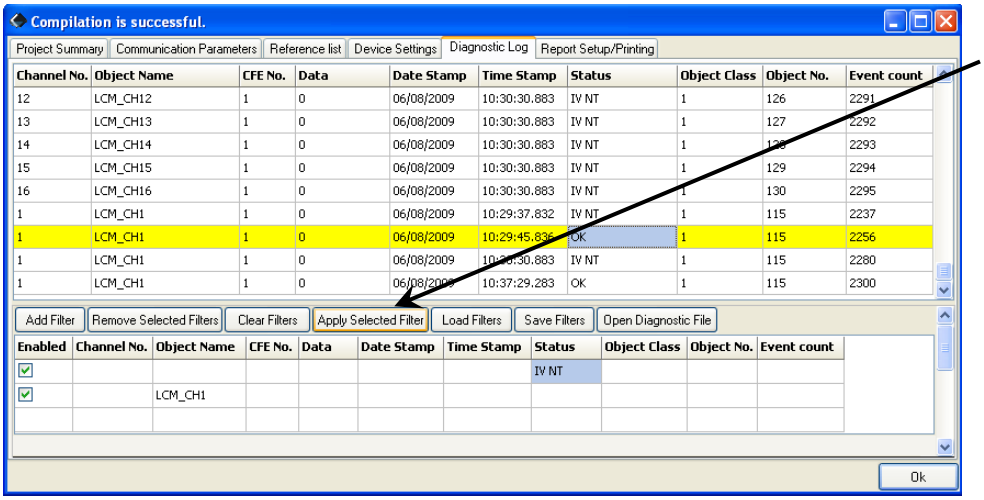


← All the events from the selected file and selected sections appear.

To further select specific events:

← 3) Define a filter for the report.

In the example above, the filter will only show events with an "IV NT" status or Object Name "LCM_CH1".


Compilation is successful.
Project Summary
Communication Parameters
Reference list
Device Settings
Diagnostic Log
Report Setup/Printing
Channel No. | Object Name | CFE No. | Data | Date Stamp | Time Stamp | Status | Object Class | Object No. | Event count
12 | LCM_CH12 | 1 | 0 | 06/08/2009 | 10:30:30.883 | IV NT | 1 | 126 | 2291
13 | LCM_CH13 | 1 | 0 | 06/08/2009 | 10:30:30.883 | IV NT | 1 | 127 | 2292
14 | LCM_CH14 | 1 | 0 | 06/08/2009 | 10:30:30.883 | IV NT | 1 | 128 | 2293
15 | LCM_CH15 | 1 | 0 | 06/08/2009 | 10:30:30.883 | IV NT | 1 | 129 | 2294
16 | LCM_CH16 | 1 | 0 | 06/08/2009 | 10:30:30.883 | IV NT | 1 | 130 | 2295
1 | LCM_CH1 | 1 | 0 | 06/08/2009 | 10:29:37.832 | IV NT | 1 | 115 | 2237
1 | LCM_CH1 | 1 | 0 | 06/08/2009 | 10:29:45.836 | OK | 1 | 115 | 2256
1 | LCM_CH1 | 1 | 0 | 06/08/2009 | 10:30:30.883 | IV NT | 1 | 115 | 2280
1 | LCM_CH1 | 1 | 0 | 06/08/2009 | 10:37:29.283 | OK | 1 | 115 | 2300
Add Filter
Remove Selected Filters
Clear Filters
Apply Selected Filter
Load Filters
Save Filters
Open Diagnostic File
Enabled | Channel No. | Object Name | CFE No. | Data | Date Stamp | Time Stamp | Status | Object Class | Object No. | Event count
IV NT
LCM_CH1
Ok

4) Click on the "Apply Selected Filter" button so all the events from the selected file will appear.

In this example, "IV NT" Status or Object Name "LCM_CH1" events are the only events shown.

Figure 5-26 – Print Report Dialog box – Diagnostic Log Tab with Filters

Other filters may be added and only the ☑ Enabled filters will be applied. Further description of log filtering can be found in the Diagnostic Log Filters section.

5.4.7 *Print Setup*

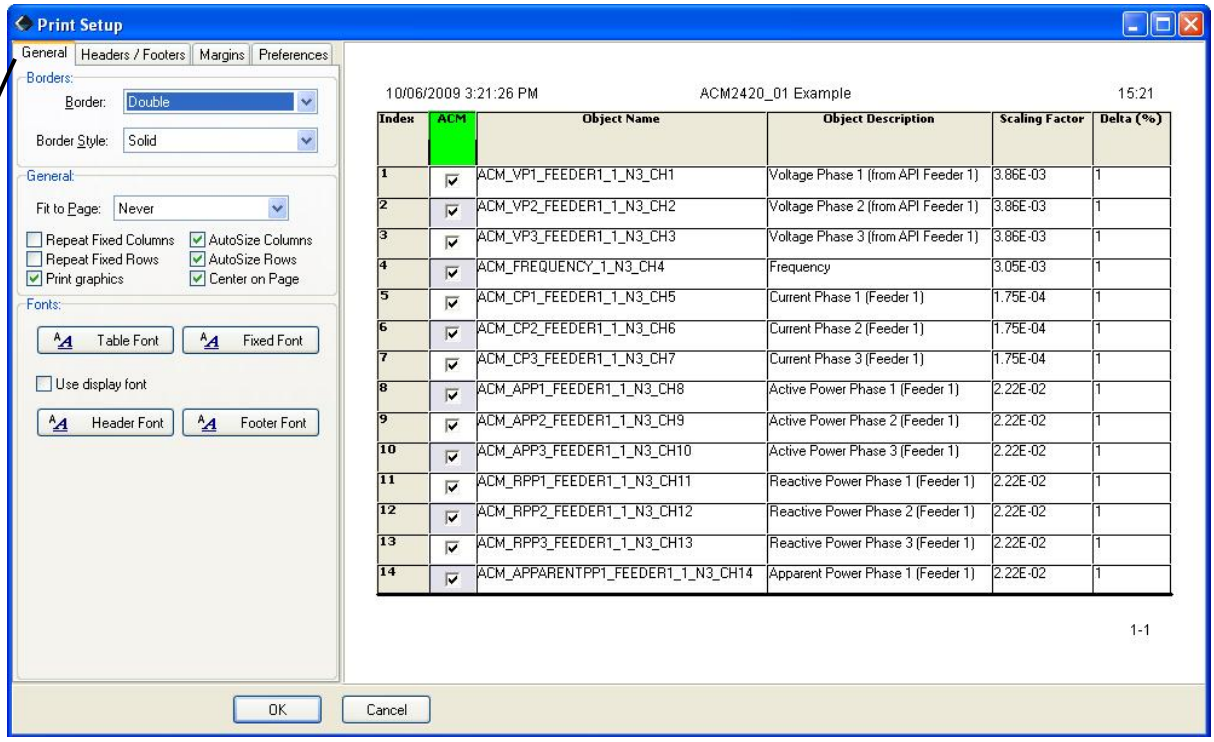
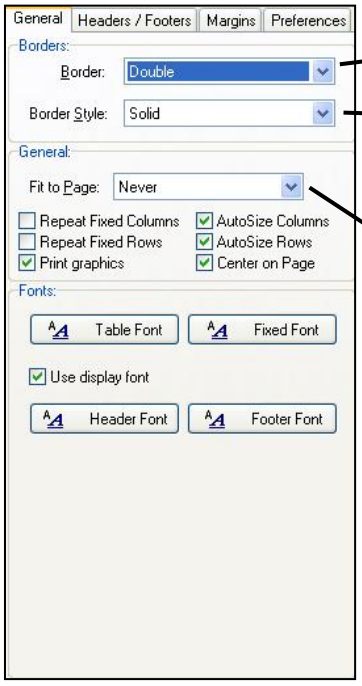


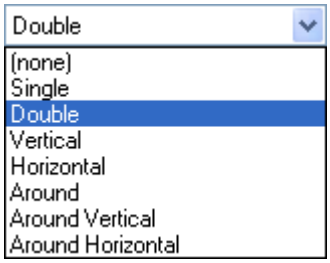
Figure 5-27 – Print Setup

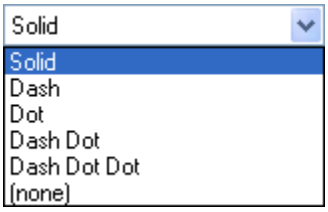
5.4.7.1 *Print Setup General*



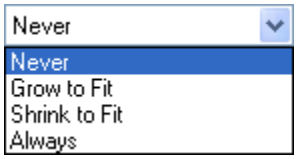
Borders:

+ Changes the lines surrounding the cells.





General:



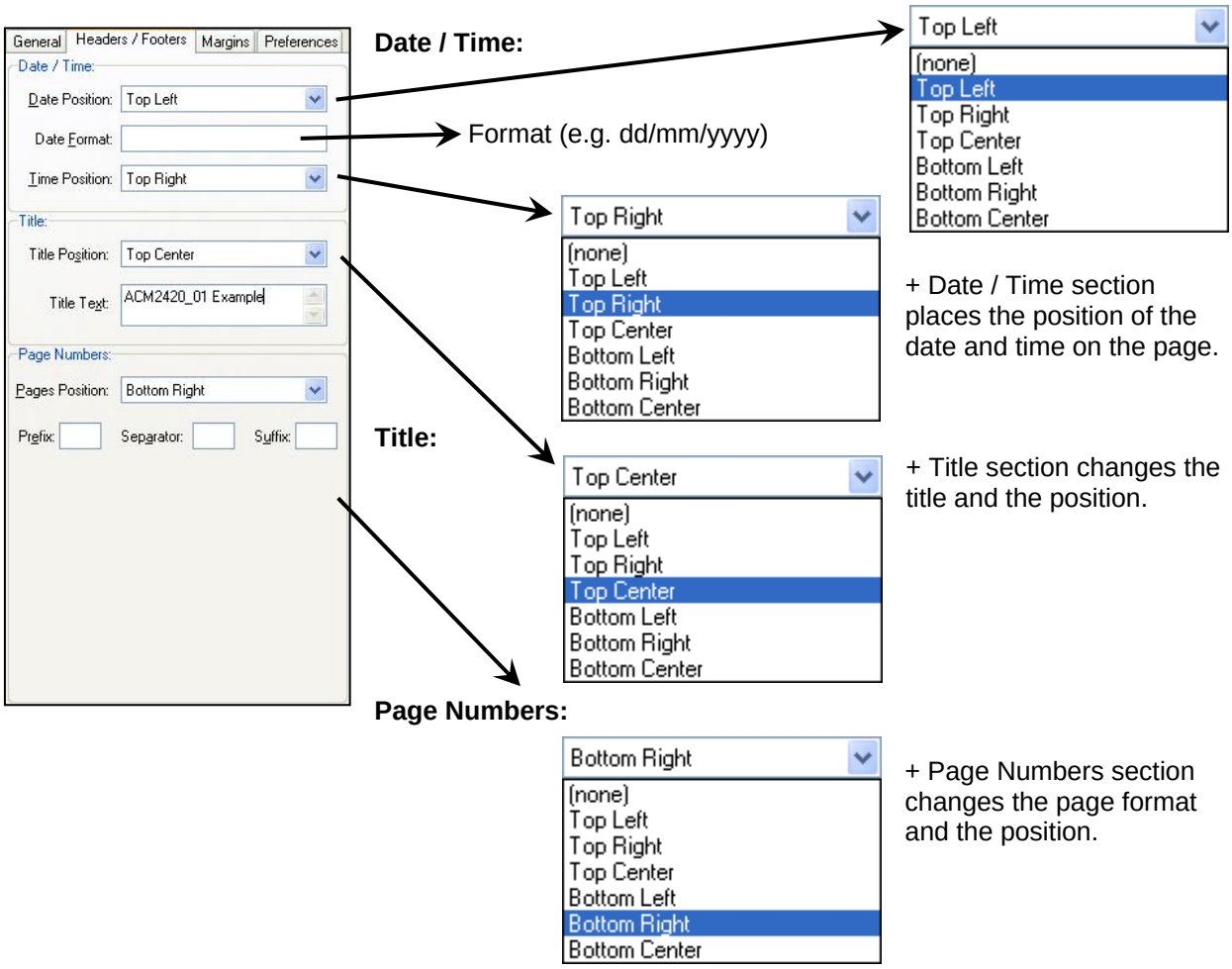
+ General section changes how the printed page fits on the specified paper size.

+ To print the graphics (e.g. "☑") on tables, tick "☑ Print graphics".

Fonts:

+ Fonts section specifies what fonts, styles, and size are to be printed.
+ By ticking ☑ "Use display font" overrides the specified fonts and uses the displayed default fonts.

5.4.7.2 *Print Setup Headers/Footers*

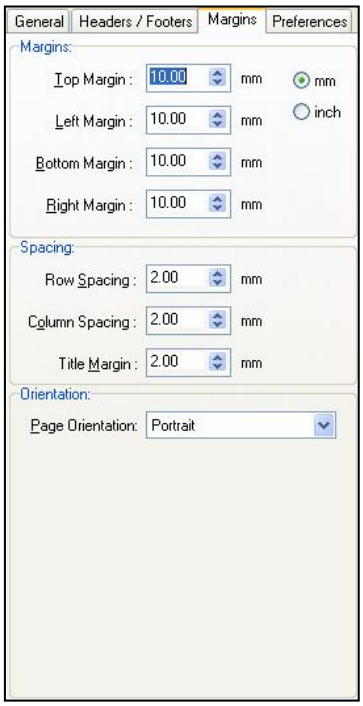


+ Date / Time section places the position of the date and time on the page.

+ Title section changes the title and the position.

+ Page Numbers section changes the page format and the position.

5.4.7.3 *Print Setup Margins*



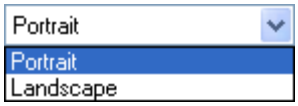
Margins:

+ This section changes the space around the printed page.

Spacing:

+ This section changes the space around each cell on the printed page.

Orientation:



+ This Orientation section changes the printed page direction to the length or the width.

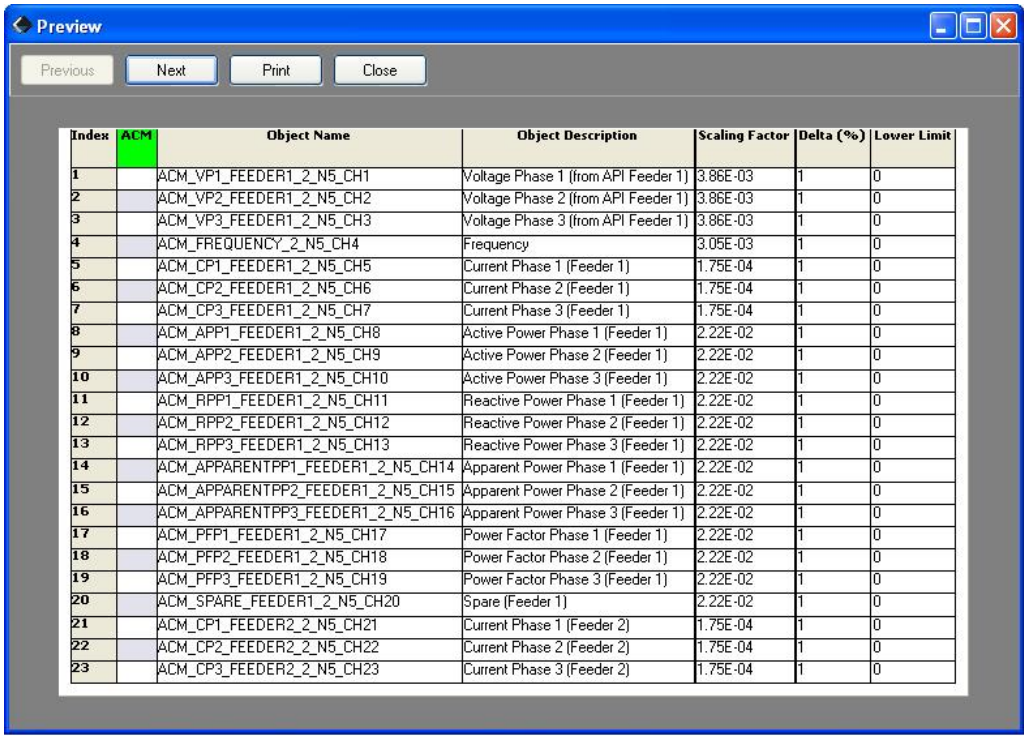
5.4.7.4 *Print Setup Preferences*

Save settings:

+ All the settings in the General, Headers / Footers, and Margins settings can “Save settings” and then “Load settings” for other printing sessions.

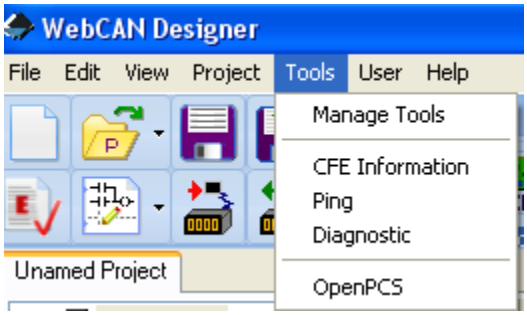
5.4.8 Print Preview

By selecting Print Preview the selected settings in the General, Headers / Footers, and Margins sections will be displayed:



Index	ACM	Object Name	Object Description	Scaling Factor	Delta (%)	Lower Limit
1		ACM_VP1_FEEDER1_2_N5_CH1	Voltage Phase 1 (from API Feeder 1)	3.86E-03	1	0
2		ACM_VP2_FEEDER1_2_N5_CH2	Voltage Phase 2 (from API Feeder 1)	3.86E-03	1	0
3		ACM_VP3_FEEDER1_2_N5_CH3	Voltage Phase 3 (from API Feeder 1)	3.86E-03	1	0
4		ACM_FREQUENCY_2_N5_CH4	Frequency	3.05E-03	1	0
5		ACM_CP1_FEEDER1_2_N5_CH5	Current Phase 1 (Feeder 1)	1.75E-04	1	0
6		ACM_CP2_FEEDER1_2_N5_CH6	Current Phase 2 (Feeder 1)	1.75E-04	1	0
7		ACM_CP3_FEEDER1_2_N5_CH7	Current Phase 3 (Feeder 1)	1.75E-04	1	0
8		ACM_APP1_FEEDER1_2_N5_CH8	Active Power Phase 1 (Feeder 1)	2.22E-02	1	0
9		ACM_APP2_FEEDER1_2_N5_CH9	Active Power Phase 2 (Feeder 1)	2.22E-02	1	0
10		ACM_APP3_FEEDER1_2_N5_CH10	Active Power Phase 3 (Feeder 1)	2.22E-02	1	0
11		ACM_RPP1_FEEDER1_2_N5_CH11	Reactive Power Phase 1 (Feeder 1)	2.22E-02	1	0
12		ACM_RPP2_FEEDER1_2_N5_CH12	Reactive Power Phase 2 (Feeder 1)	2.22E-02	1	0
13		ACM_RPP3_FEEDER1_2_N5_CH13	Reactive Power Phase 3 (Feeder 1)	2.22E-02	1	0
14		ACM_APPARENTPP1_FEEDER1_2_N5_CH14	Apparent Power Phase 1 (Feeder 1)	2.22E-02	1	0
15		ACM_APPARENTPP2_FEEDER1_2_N5_CH15	Apparent Power Phase 2 (Feeder 1)	2.22E-02	1	0
16		ACM_APPARENTPP3_FEEDER1_2_N5_CH16	Apparent Power Phase 3 (Feeder 1)	2.22E-02	1	0
17		ACM_PFP1_FEEDER1_2_N5_CH17	Power Factor Phase 1 (Feeder 1)	2.22E-02	1	0
18		ACM_PFP2_FEEDER1_2_N5_CH18	Power Factor Phase 2 (Feeder 1)	2.22E-02	1	0
19		ACM_PFP3_FEEDER1_2_N5_CH19	Power Factor Phase 3 (Feeder 1)	2.22E-02	1	0
20		ACM_SPARE_FEEDER1_2_N5_CH20	Spare (Feeder 1)	2.22E-02	1	0
21		ACM_CP1_FEEDER2_2_N5_CH21	Current Phase 1 (Feeder 2)	1.75E-04	1	0
22		ACM_CP2_FEEDER2_2_N5_CH22	Current Phase 2 (Feeder 2)	1.75E-04	1	0
23		ACM_CP3_FEEDER2_2_N5_CH23	Current Phase 3 (Feeder 2)	1.75E-04	1	0

5.5 WebCAN Designer Studio Tools



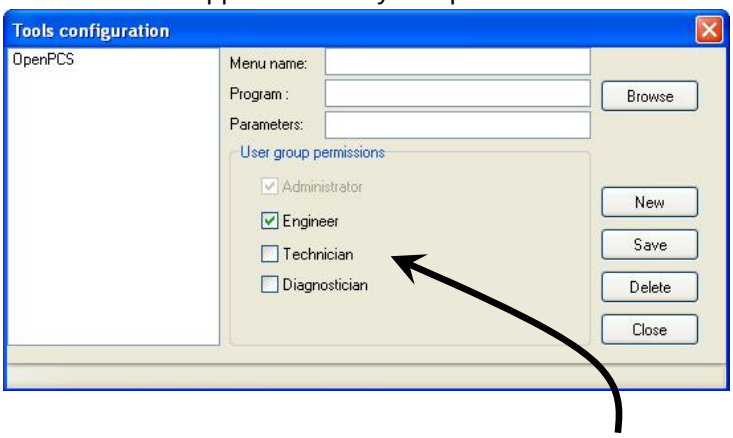
← Tools for WebCAN Designer Studio are added, deleted, and configured from the "ManageTools", Tools pull-down menu.

Depending upon the WDS configuration, the Tools menu may or may not have OpenPCS and/or ICD Designer.

5.5.1 Manage Tools

User Administration "ToolsConfig" must be ☑ set.

Other tools and applications may be opened from within WebCAN Designer Studio's Tools pull-down menu. Add the appropriate

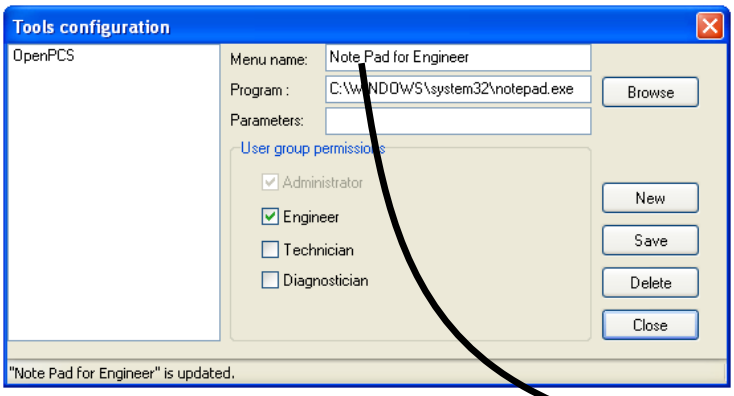


← Menu name text to appear on menu.
← By selecting Browse button allows selection of other applications that will appear at the bottom of the Tools pull-down menu.

← Click Save to complete action adding item to tools menu.
← Select and delete to remove items from the tool menu.
← Close Tools Configuration dialog box when done.

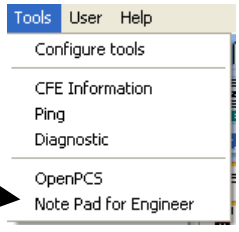
This menu item will appear to only the user groups ☑ ticked. The Administrator always has access.

For example, the Notepad application can be added to WDS for an "Engineer" user:



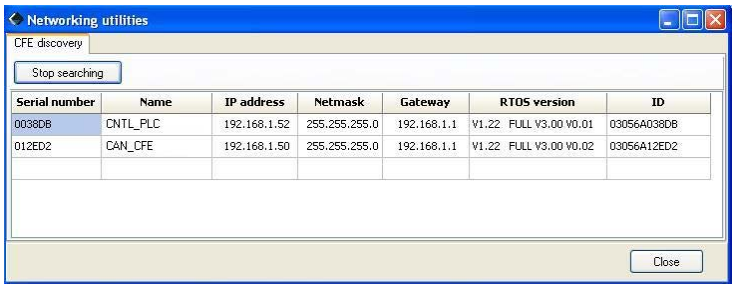
← Type in what would appear on menu.
← Selecting "Browse" to select the item to execute.

← Click "Save" to save new menu item.



5.5.2 CFE Information

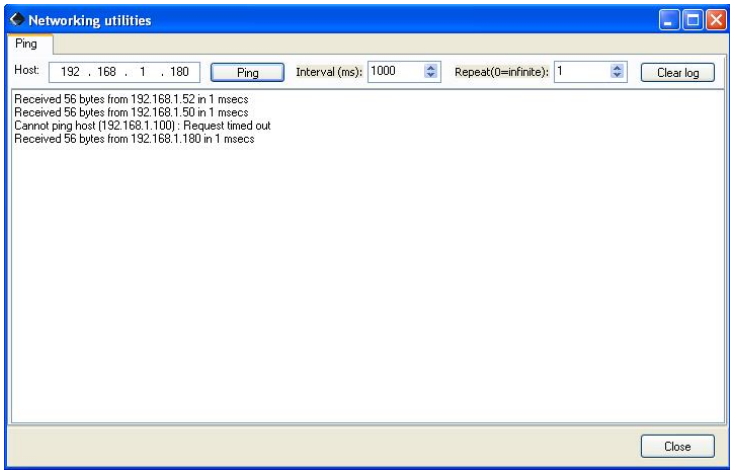
This tool menu item cannot be deleted from Tools menu. The CFE Information displays the real-time online CFE network information:



These CFE's may be anywhere on the RTU, BCU, or DA RTU network

5.5.3 Ping

Ping is a basic Internet tool that allows a user to verify that a particular IP address exists and can accept requests. Ping is a diagnostic tool to check that WebCAN Designer Studio can see that the CFE(s) is actually operating. Ping works by sending an Internet Control Message Protocol (ICMP) Echo Request to a specified interface on the network and waiting for a reply. Ping tests connectivity and determines response time.



This tool menu item cannot be deleted from Tools menu.

5.5.4 Diagnostic

See the following System Diagnostic section. This too menu item cannot be deleted from Tools menu.

5.5.5 OpenPCS

Opens the external OpenPCS application.
For more information, see the OpenPCS manual [reference 1,2]
For troubleshooting, see External Application troubleshooting section.

6 System Diagnostic User Guide

User Administration “Diagnostic” must be ☑ set.

System Diagnostic icon or Tools / Diagnostic pull-down menu item enter System Diagnostics.

← System Diagnostics is a real-time interface from the WebCAN Designer Studio design and the actual system hardware.

To view either Diagnostics or the project switch between the tabs.

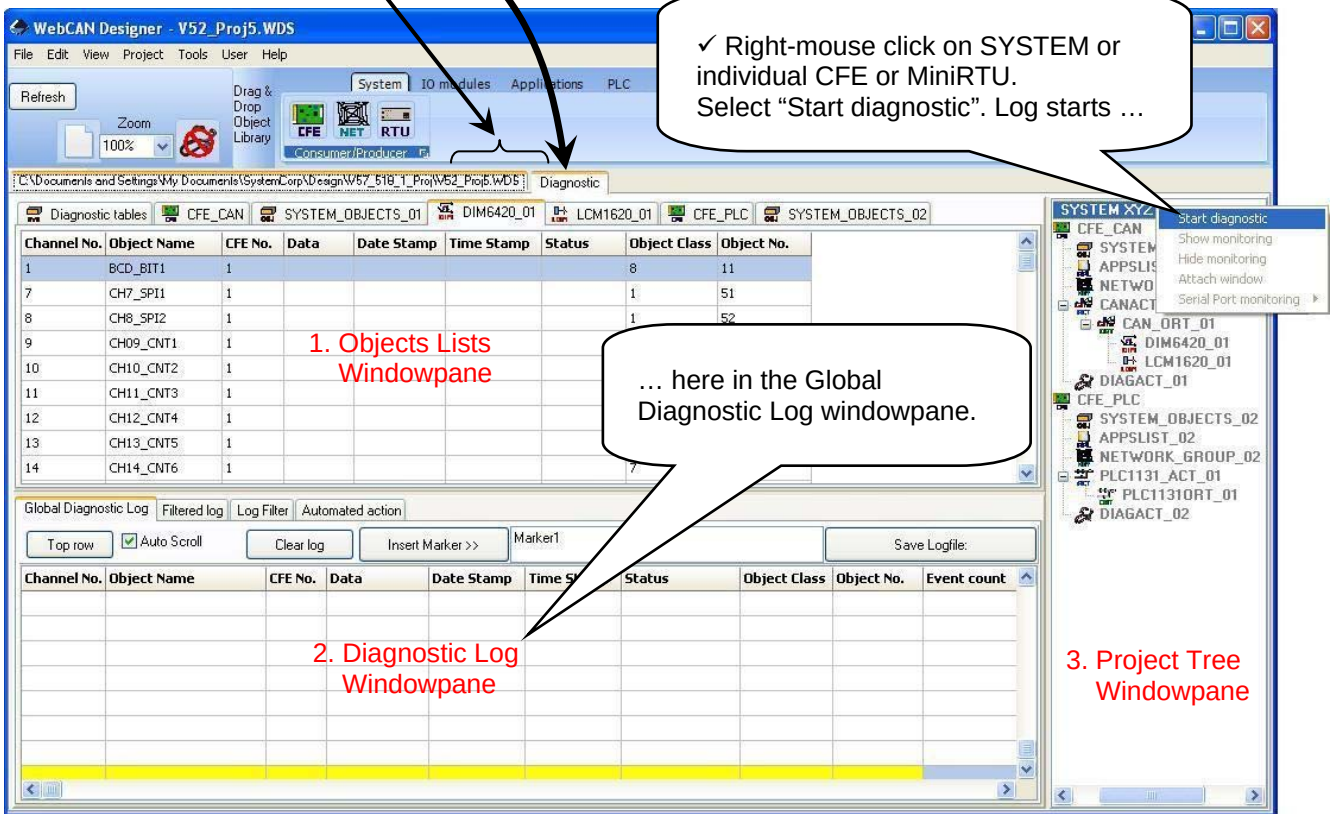

WebCAN Designer - V52_Proj5.WDS
✓ Right-mouse click on SYSTEM or individual CFE or MiniRTU.
Select “Start diagnostic”. Log starts …
1. Objects Lists Windowpane
… here in the Global Diagnostic Log windowpane.
2. Diagnostic Log Windowpane
3. Project Tree Windowpane

Figure 6-1 – System Diagnostic Environment Window

The System Diagnostic operating mode contains 3 windowpanes:

1. Objects Lists Windowpane – Each tab is an object list of channels showing real-time data once diagnostics have been started.
2. Diagnostic Log Windowpane – Real-time display of events are displayed. Events can be filtered so specific events can be found (e.g. Filter events by Channel or CFE number, object tag name, or data).
3. Project Tree Windowpane – Identical to Project Windowpane are displayed but on right side of window and un-editable.

These windowpanes can be managed using right mouse-click pop-up menu (e.g. the windowpanes can placed in their own independent windows and monitoring CFE Serial Ports).

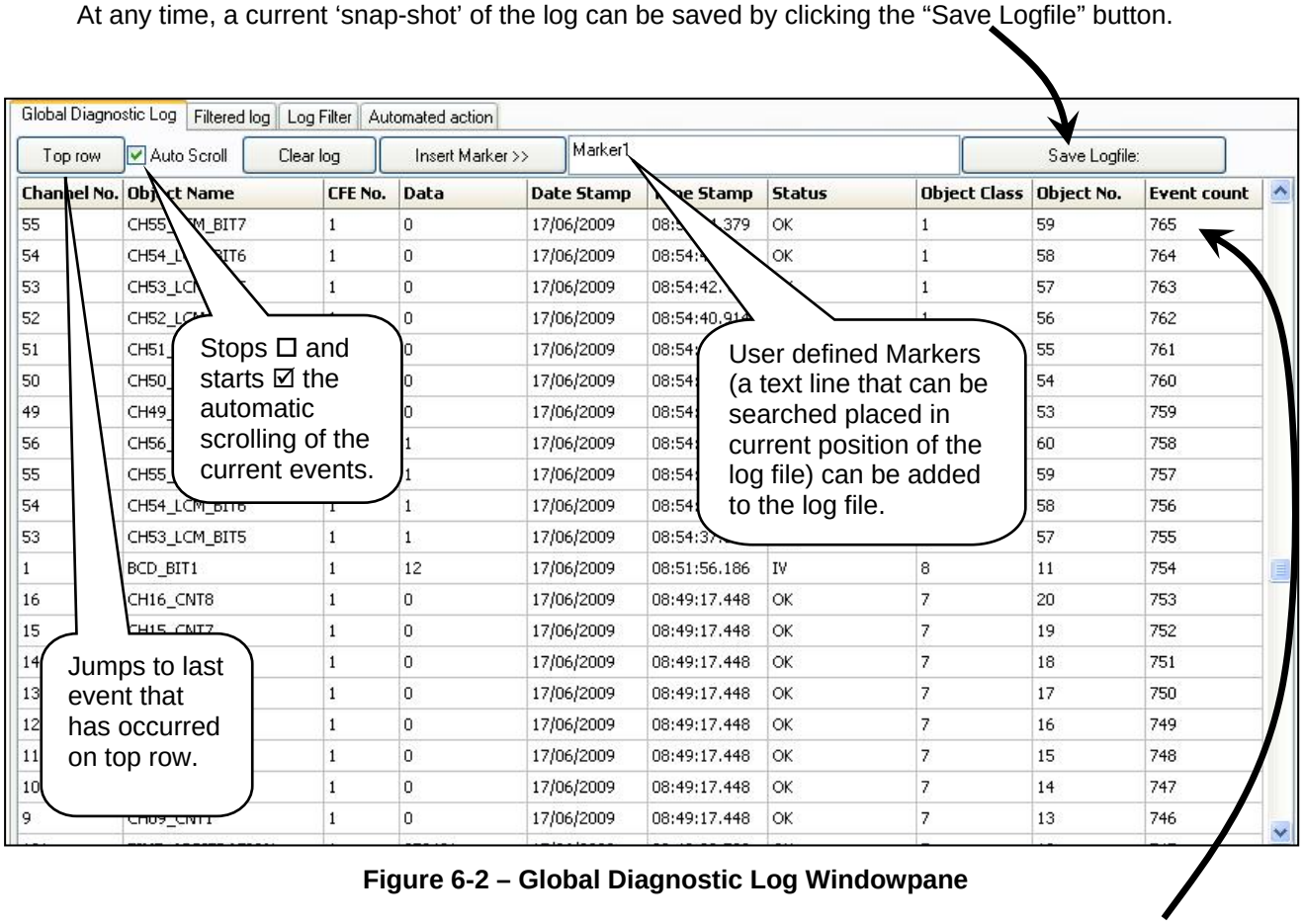
6.1 Diagnostic Log

6.1.1 Global Diagnostic Log

6.1.1.1 Save Logfile

All events are automatically saved in the file:
$HOME\Application Data\SystemCorp\Designer\Diagnostics\{WDSprojectname}~yyyymmdd_hh-mm-ss.log For example:
C:\Documents and Settings\John\Application Data\SystemCorp\Designer\Diagnostics\System XYZ~20090609_14_20_57.log

At any time, a current 'snap-shot' of the log can be saved by clicking the "Save Logfile" button.


Global Diagnostic Log
Filtered log
Log Filter
Automated action
Top row
Auto Scroll
Clear log
Insert Marker >>
Marker1
Save Logfile:
Stops ☐ and starts ☑ the automatic scrolling of the current events.
User defined Markers (a text line that can be searched placed in current position of the log file) can be added to the log file.
Jumps to last event that has occurred on top row.

Channel No.	Object Name	CFE No.	Data	Date Stamp	Time Stamp	Status	Object Class	Object No.	Event count
55	CH55_LCM_BIT7	1	0	17/06/2009	08:54:41.379	OK	1	59	765
54	CH54_LCM_BIT6	1	0	17/06/2009	08:54:4	OK	1	58	764
53	CH53_LCM_BIT5	1	0	17/06/2009	08:54:42.		1	57	763
52	CH52_LCM_BIT4	1	0	17/06/2009	08:54:40.91		1	56	762
51	CH51_LCM_BIT3	1	0	17/06/2009	08:54:			55	761
50	CH50_LCM_BIT2	1	0	17/06/2009	08:54:			54	760
49	CH49_LCM_BIT1	1	0	17/06/2009	08:54:			53	759
56	CH56_LCM_BIT8	1	1	17/06/2009	08:54:			60	758
55	CH55_LCM_BIT7	1	1	17/06/2009	08:54:			59	757
54	CH54_LCM_BIT6	1	1	17/06/2009	08:54:			58	756
53	CH53_LCM_BIT5	1	1	17/06/2009	08:54:37.			57	755
1	BCD_BIT1	1	12	17/06/2009	08:51:56.186	IV	8	11	754
16	CH16_CNT8	1	0	17/06/2009	08:49:17.448	OK	7	20	753
15	CH15_CNT7	1	0	17/06/2009	08:49:17.448	OK	7	19	752
14		1	0	17/06/2009	08:49:17.448	OK	7	18	751
13		1	0	17/06/2009	08:49:17.448	OK	7	17	750
12		1	0	17/06/2009	08:49:17.448	OK	7	16	749
11		1	0	17/06/2009	08:49:17.448	OK	7	15	748
10		1	0	17/06/2009	08:49:17.448	OK	7	14	747
9	CH09_CNT1	1	0	17/06/2009	08:49:17.448	OK	7	13	746

Figure 6-2 – Global Diagnostic Log Windowpane

All activities or every event appears in the Global Diagnostic Log. New events appear on the top row. Each event is assigned a unique "Event count" number.

The channel number, Object Name, CFE number, data, date stamp, time stamp, status, object class, and object number is shown for every event.

Further features described in the Diagnostic Pop-up Menus reference section.

6.1.1.2 *Columns in Global Diagnostic Log*

Global Diagnostic Log columns	Description
Channel No.	Every object has a channel number. Every channel number on I/O modules refer to the actual hardware channel number.
Object Name	All data points in the system database are objects and all physical hardware modules (e.g. CFE's, I/O modules) are objects. The object name is unique to the project. These are all modelled in software and appear as objects in diagnostics.
CFE No.	Communication Front End number where object is located is shown.
Data	Actual data that appears on that specific channel is displayed.
Date Stamp	Date stamp shown in Day / Month / Year format.
Time Stamp	Time shown in 24 hour clock format to the millisecond.
Status	Status of the data displayed (see Log Status Description table below).
Object Class	Specific type number of object.
Object No.	Object numbers are unique within each CFE. Note CFE No. in addition to the Object No.
Event count	Unique number assigned to the current activity or event that has occurred.

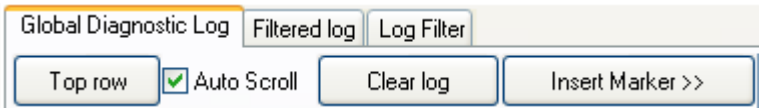
Table 6-1 – Columns in Global Diagnostic Log

Status	Description
OK	Valid data – Data is correct. A value is correct if the Object value was correctly acquired.
BL	Blocked – The value of the Object is blocked for transmission. The value remains in the state that was acquired before it was blocked. For example, blocking and de-blocking may be initiated by a local lock or a local automatic cause.
CA	Counter was adjusted – Counter was adjusted since last reading.
CY	Carry – Counter overflow occurred in the corresponding integration period.
IV	Invalid data – Data is incorrect. A value is valid if it was correctly acquired. After the acquisition function recognizes abnormal conditions of the information source (missing or non-operation updating devices) the value is then marked invalid. The value of the Object is not defined under this condition. The marked invalid is used to indicate to the destination that the value may be incorrect and cannot be used.
NT	Not Topical – Not updated properly. A value is topical if the most recent update was successful. If not topical then Object was not updated successfully during a specified time (setting or parameter) interval or it is unavailable.
OV	Over Flow – Data is beyond limit. The value of the Object is beyond a predefined range of value mainly applicable to analog values.
SB	Substitution – Value has been substituted. The value of the Object is provided by input of an operator (in WebCAN Designer Studio by diagnostic Substitution), or by an automated source.

Table 6-2 – Global Diagnostic Log Status Descriptions

6.1.1.3 *Log Filters*

Events can be filtered to display only specific events.



← Select these tabs to view all the events or view only the events defined by a logical filter.

Every event will appear in the Global Diagnostic Log including normal maintenance events such as GPS time synchronization or starting of other applications. If there are specific objects and channels to be monitored then specific events can be reported in the “Filtered Log”.

The “Log Filter” can be defined by channel, name, CFE, data, date, time, status, object class or object numbers. For example, Log Filter can show only channel 39 or those events with an “IV” (invalid) status.

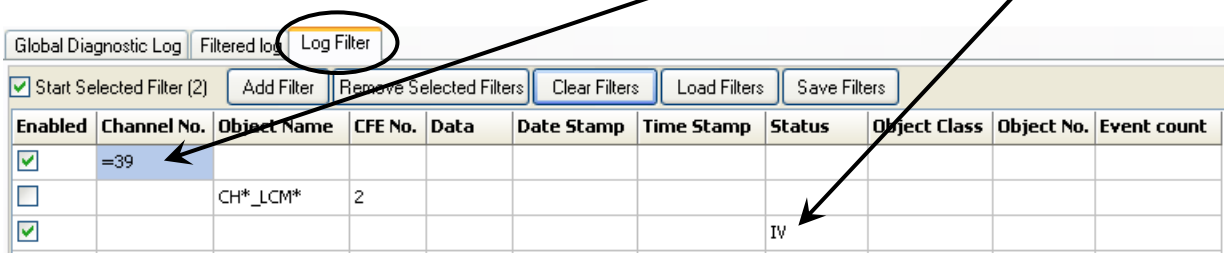


Figure 6-3 – Defining Diagnostic Log Filter Example

Filters may contain wildcard characters. As in the above example on the second row ‘CH*_LCM*’ uses the ‘*’ wildcard to define an object name beginning with ‘CH’ and containing the characters ‘_LCM’. The ‘*’ denotes any number of characters after the ‘CH’ or after the ‘_LCM’.

All the filter descriptions on any enabled row must be true for the event to be reported on the filtered log. For example, if the second row above was also enabled then all object names beginning with ‘CH’ and containing the characters ‘_LCM’ and only in CFE number ‘2’ will be reported. This enabled row or the first or third enabled row will then report ‘CH*_LCM*’ only in CFE 2 or channel 39 or any invalid statusl.

Both arithmetic arguments and logical operators may also be used.

Summary of filter definitions:

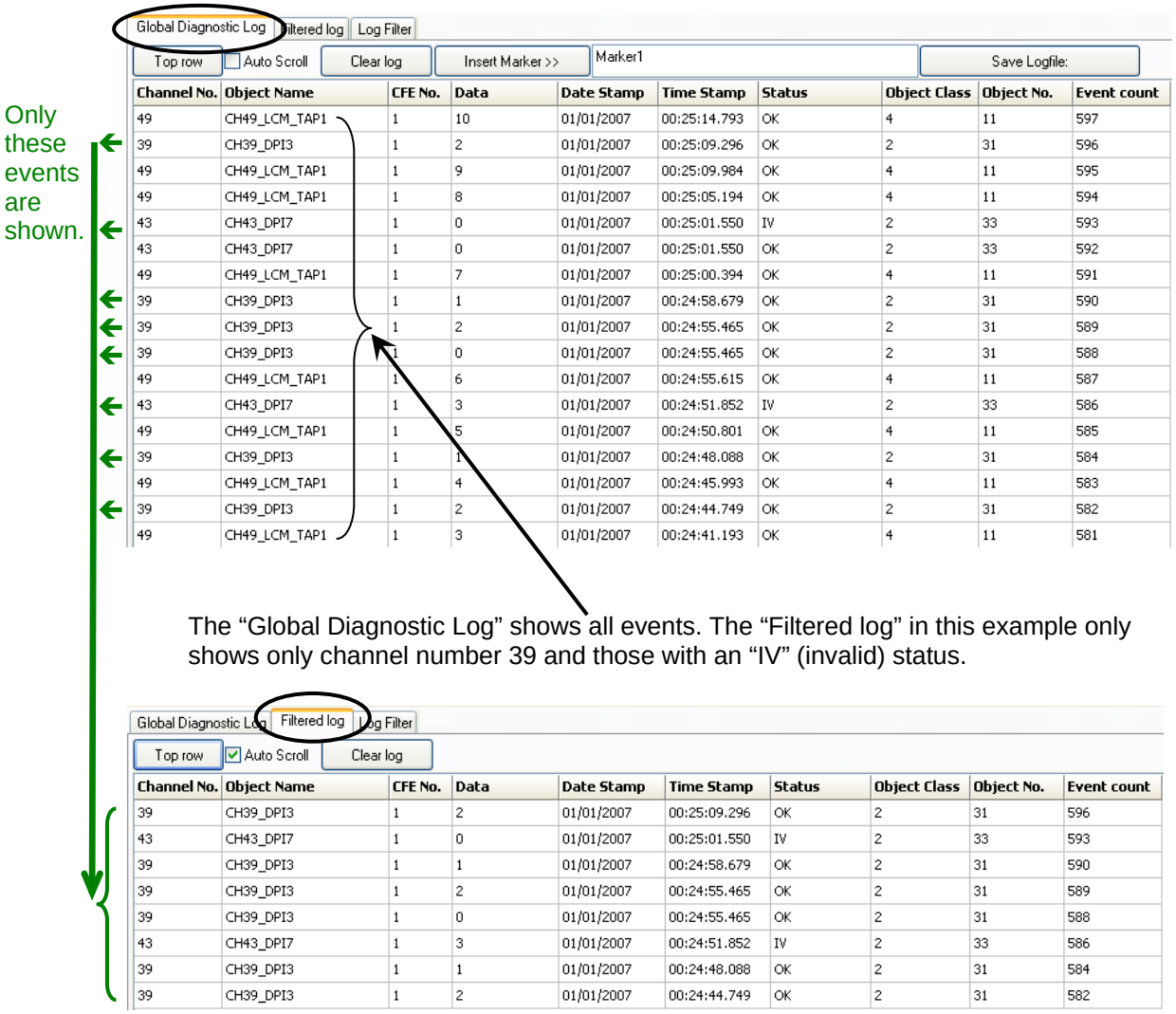
Wildcards:
- [Characters]* ➔ Where “*” denotes multiple character matches
- [Characters]? ➔ Where “?” denotes single character matches

Arithmetic:
- \> ➔ is greater-than
- < ➔ is less-than
- >= ➔ is greater-than or equal-to
- <= ➔ is less-than or equal-to
- = ➔ is equal-to
- ! ➔ is not equal-to

Logical must be used with “(” and “)”:
- & ➔ is a logical AND
- ^ ➔ is a logical OR, or
- ; ➔ is a logical OR

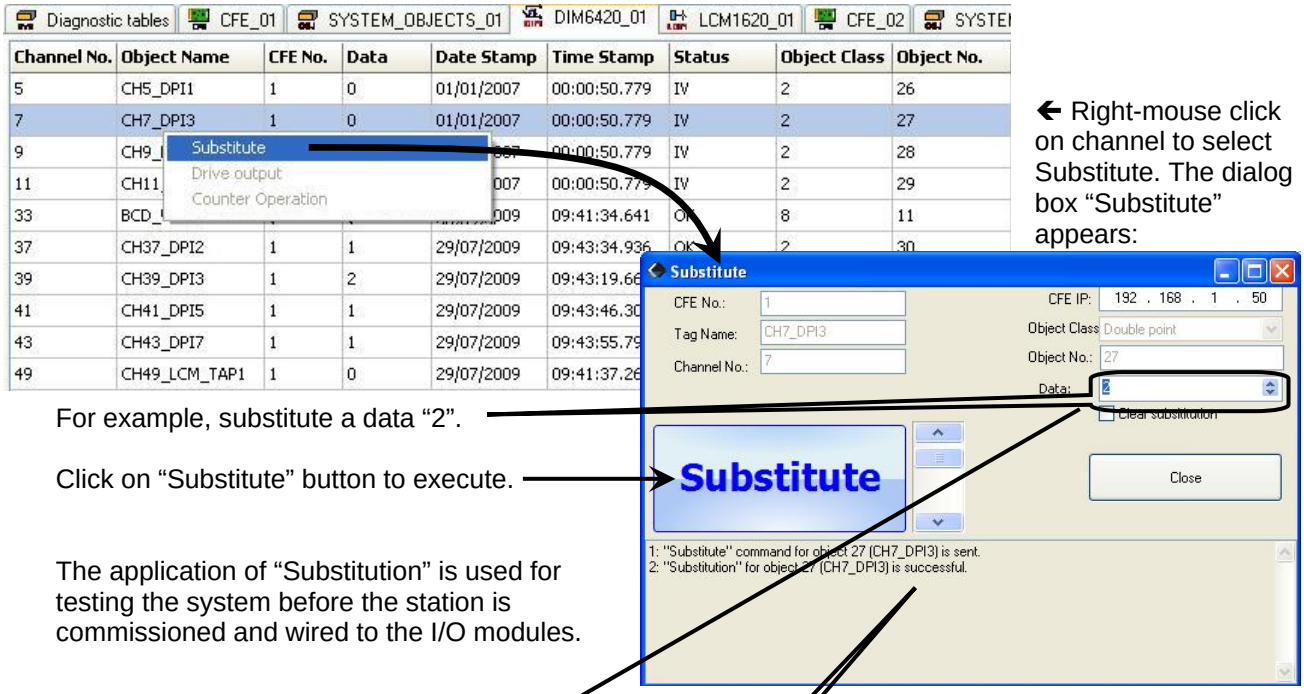
For example a filter definition of (=4)^(>=9)&(<=15)&(!13) would report only the events where the event is a 4, 9, 10, 11, 12, 14, or 15. Note that the “(“ and “)” must be used with the logical operators.

Any 1 to 5 filters can be “Enabled” ☑. The “Start Selected Filters” ☑ tick box is ticked to start the “Filtered log” to display only those filters created.



6.2 Diagnostic Monitoring

6.2.1 Substitute



Channel No.	Object Name	CFE No.	Data	Date Stamp	Time Stamp	Status	Object Class	Object No.
5	CH5_DPI1	1	0	01/01/2007	00:00:50.779	IV	2	26
7	CH7_DPI3	1	0	01/01/2007	00:00:50.779	IV	2	27
9	CH9_				00:00:50.779	IV	2	28
11	CH11			007	00:00:50.779	IV	2	29
33	BCD_			009	09:41:34.641	OK	8	11
37	CH37_DPI2	1	1	29/07/2009	09:43:34.936	OK	2	30
39	CH39_DPI3	1	2	29/07/2009	09:43:19.66			
41	CH41_DPI5	1	1	29/07/2009	09:43:46.30			
43	CH43_DPI7	1	1	29/07/2009	09:43:55.79			
49	CH49_LCM_TAP1	1	0	29/07/2009	09:41:37.26			

← Right-mouse click on channel to select Substitute. The dialog box "Substitute" appears:

For example, substitute a data "2".

Click on "Substitute" button to execute.

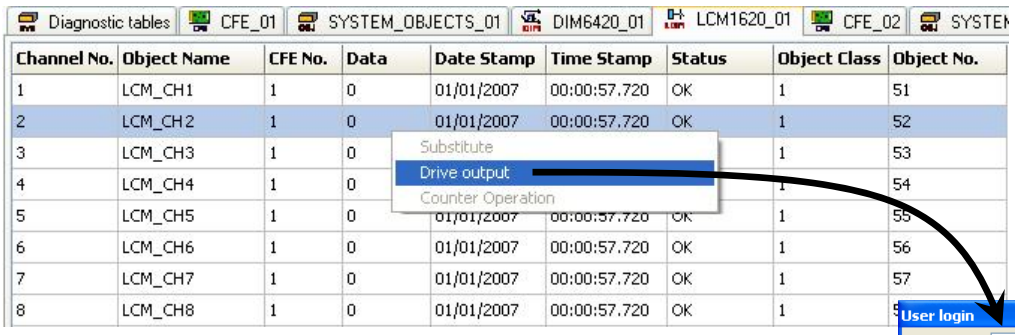
The application of "Substitution" is used for testing the system before the station is commissioned and wired to the I/O modules.

Channel No.	Object Name	CFE No.	Data	Date Stamp	Time Stamp	Status	Object Class	Object No.
5	CH5_DPI1	1	0	01/01/2007	00:00:50.779	IV	2	26
7	CH7_DPI3	1	2	29/07/2009	10:56:24.977	SB	2	27

← Data substituted and status is "SB".

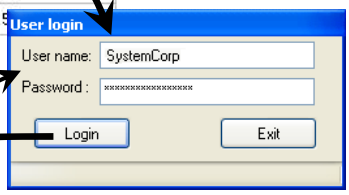
Substituting digital outputs does not operate the selected output channel. Substitution is only displayed on the DSP-10 display and marked accordingly in the system database.

6.2.2 *Direct Drive*



Channel No.	Object Name	CFE No.	Data	Date Stamp	Time Stamp	Status	Object Class	Object No.
1	LCM_CH1	1	0	01/01/2007	00:00:57.720	OK	1	51
2	LCM_CH2	1	0	01/01/2007	00:00:57.720	OK	1	52
3	LCM_CH3	1	0				1	53
4	LCM_CH4	1	0				1	54
5	LCM_CH5	1	0				1	55
6	LCM_CH6	1	0	01/01/2007	00:00:57.720	OK	1	56
7	LCM_CH7	1	0	01/01/2007	00:00:57.720	OK	1	57
8	LCM_CH8	1	0	01/01/2007	00:00:57.720	OK	1	5

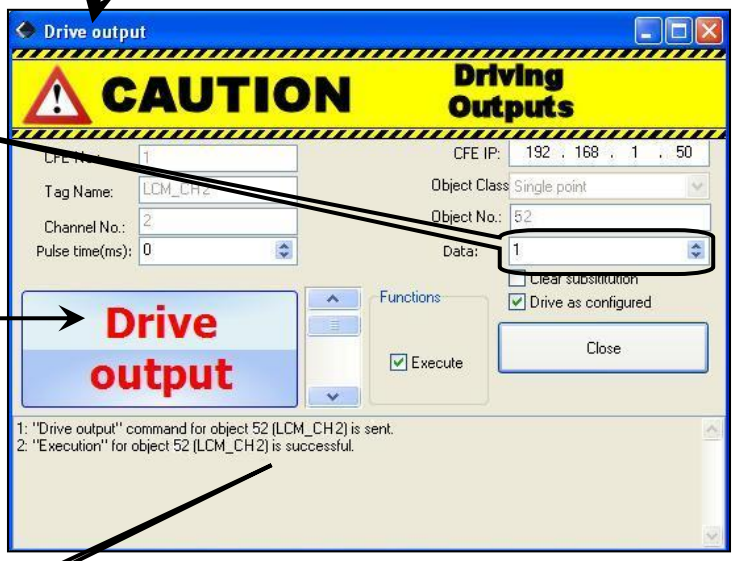
← Right-mouse click on channel to directly drive an output value (in this example, channel 2 on LCM1620_01).



"Drive output" forces a direct change to a module's channel. As an added security measure, the user forcing the drive must login again by confirming their password.

After a successful login, the Drive Output dialog box allows the setting of data directly to the selected channel.

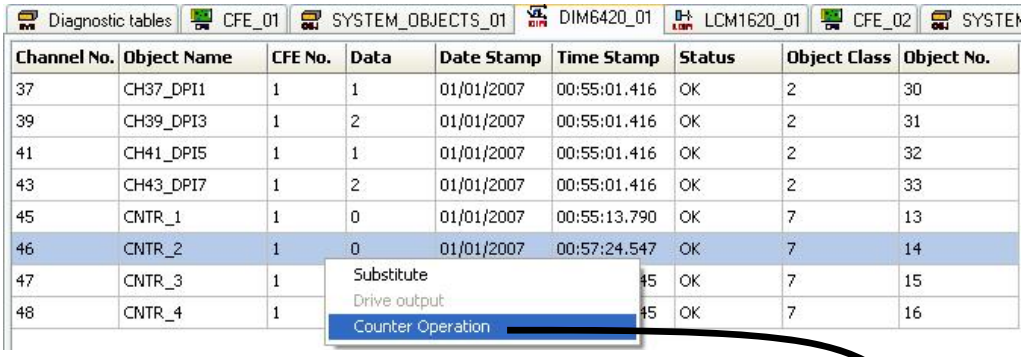
Click the "Drive output" button to execute.



Channel No.	Object Name	CFE No.	Data	Date Stamp	Time Stamp	Status	Object Class	Object No.
1	LCM_CH1	1	0	29/07/2009	11:41:30.585	OK	1	51
2	LCM_CH2	1	1	29/07/2009	11:41:30.585	OK	1	52
3	LCM_CH3	1	0	29/07/2009	11:41:30.585	OK	1	53

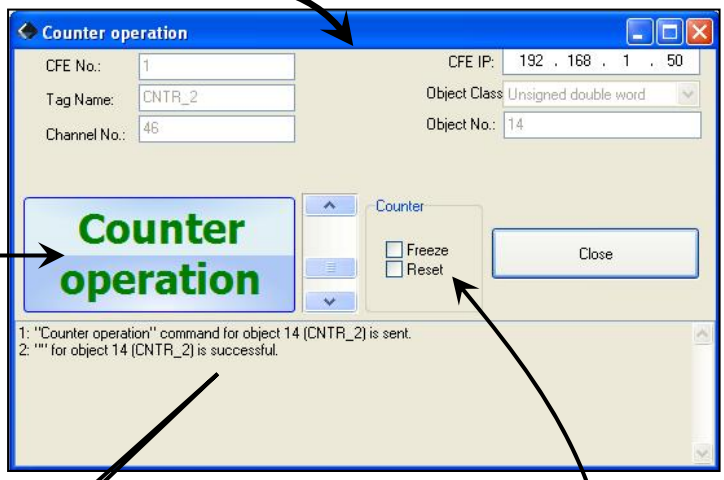
6.2.3 Counter Operation

This diagnostic tool allows the viewing of the DIM (counter) accumulator.

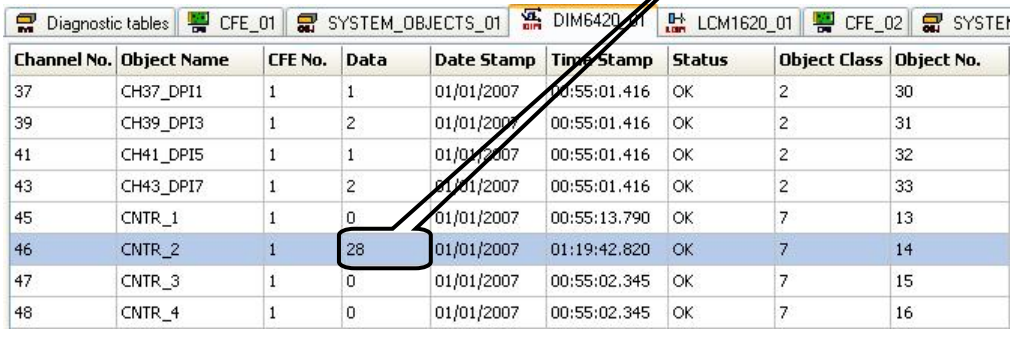


Channel No.	Object Name	CFE No.	Data	Date Stamp	Time Stamp	Status	Object Class	Object No.
37	CH37_DPI1	1	1	01/01/2007	00:55:01.416	OK	2	30
39	CH39_DPI3	1	2	01/01/2007	00:55:01.416	OK	2	31
41	CH41_DPI5	1	1	01/01/2007	00:55:01.416	OK	2	32
43	CH43_DPI7	1	2	01/01/2007	00:55:01.416	OK	2	33
45	CNTR_1	1	0	01/01/2007	00:55:13.790	OK	7	13
46	CNTR_2	1	0	01/01/2007	00:57:24.547	OK	7	14
47	CNTR_3	1			45	OK	7	15
48	CNTR_4	1			45	OK	7	16

← Right-mouse click on channel to select Counter Operation – dialog box appears:



Click on “Counter operation” to read the accumulator (counter).



Channel No.	Object Name	CFE No.	Data	Date Stamp	Time Stamp	Status	Object Class	Object No.
37	CH37_DPI1	1	1	01/01/2007	00:55:01.416	OK	2	30
39	CH39_DPI3	1	2	01/01/2007	00:55:01.416	OK	2	31
41	CH41_DPI5	1	1	01/01/2007	00:55:01.416	OK	2	32
43	CH43_DPI7	1	2	01/01/2007	00:55:01.416	OK	2	33
45	CNTR_1	1	0	01/01/2007	00:55:13.790	OK	7	13
46	CNTR_2	1	28	01/01/2007	01:19:42.820	OK	7	14
47	CNTR_3	1	0	01/01/2007	00:55:02.345	OK	7	15
48	CNTR_4	1	0	01/01/2007	00:55:02.345	OK	7	16

Note that the counter values may be reported by event timer as defined by the DIM Counter “Periodic Time” settings. The counter data may optionally be reset after reporting the periodic event. See DIM Counter inputs section under the Digital Input Module description for more information.

Freeze without reset when “Periodic Time = 0 ms”
The counter reports its total value, but continues to accumulate the value without resetting the value.

Freeze with reset when “Periodic Time = 0 ms”
When the counter reports its total, the accumulator is reset to zero and the counter next period begins.

7 Reference

7.1 Toolbar Windowpane

For all the menu selections to appear, the appropriate User Administration settings must be set "☑". See User Administration Group Access Rights section for more information.

Figure 7-1 – Toolbar Windowpane

Create a new WebCAN project. User Administration "EditProject" must be ☑ set.

Open and re-open a WebCAN project from disk. User Administration "OpenProject" must be ☑ set.

Save the current WebCAN project. User Administration "SaveProject" must be ☑ set.

Copy or 'save as' the current WebCAN project into different name (backup).
User Administration "SaveProject" must be ☑ set.

Print out the report for the completed WebCAN project. This is the completed design; therefore, the report is error free. See Print Section for more details.
User Administration "Printing" must be ☑ set.

Compile the current WebCAN project. See Compile (check) and Download Project section for more details. User Administration "CompileProject" must be ☑ set.

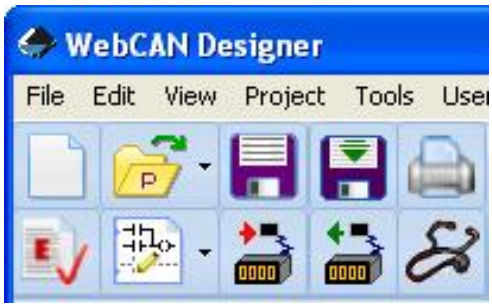
Start OpenPCS application from the current WebCAN project.
Requires a Infoteam OpenPCS license key.

Compile and Download the current WebCAN project into the system. See Compile and Download section for more details. Set "DownloadProject" ☑ in User Administration.

Open the WebCAN Designer Studio project from a CFE.
User Administration "UploadProject" must be ☑ set.

Start system diagnostic for the current WebCAN project.
User Administration "Diagnostic" must be ☑ set.

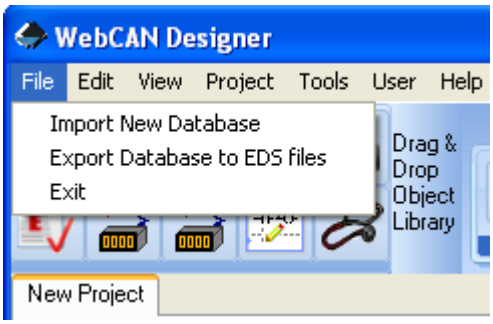
7.2 Menu Bar Menus



← This section describes all the pull-down menus.

For all the menu selections to appear, the appropriate User Administration settings must be set "☑". See User Administration Group Access Rights section for more information.

7.2.1 File Pull-down Menu



7.2.1.1 *Import New Database*

This menu item imports EDS data files. Only available to Administrators and any user with User Administration access group with UpdateEDS ☑ ticked.

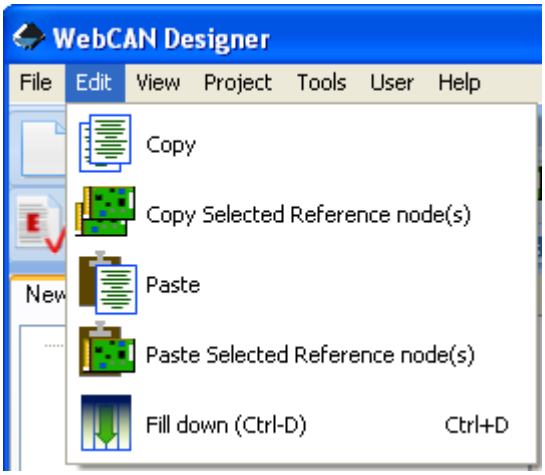
7.2.1.2 *Export Database to EDS files*

This menu item exports EDS data files. Only available to Administrators and any user with User Administration access group with UpdateEDS ☑ ticked.

7.2.1.3 *Exit*

Exit will exit the WebCAN Designer Studio application.

7.2.2 Edit Pull-down Menu



7.2.2.1 *Copy*

Copies selection to clipboard.

7.2.2.2 *Copy Selected Reference Node(s)*

Copies selected nodes from table to clipboard.

7.2.2.3 *Paste*

Pastes contents of clipboard to current position.

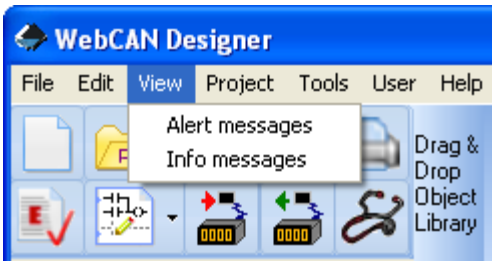
7.2.2.4 *Paste Selected Referece Node(s)*

Pastes node contents of clipboard to current position. User Administration "PasteTable" must be ☑ set.

7.2.2.5 *Fill Down*

Fills table column with the first selected cell contents.

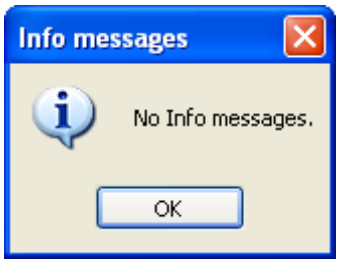
7.2.3 View Pull-down Menu



7.2.3.1 Alert & Info Messages

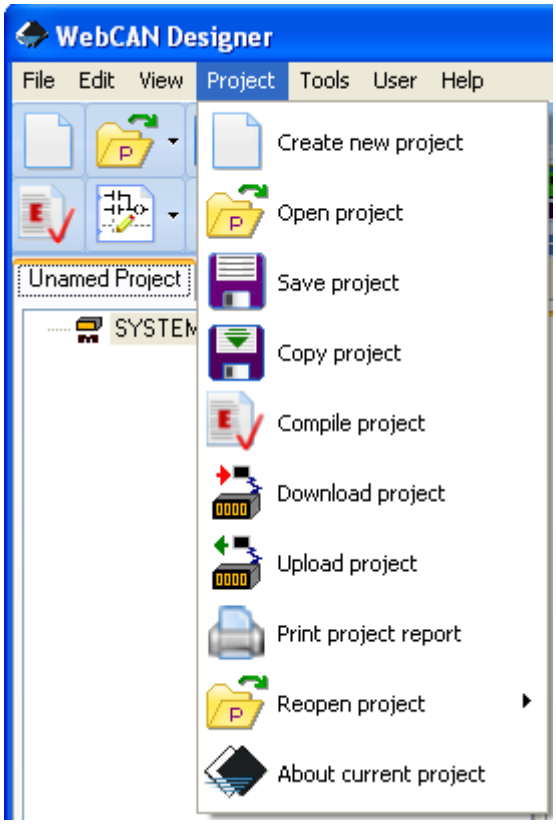
This menu item will display the current Alert and Info Messages for the current project in the lower right-hand corner of the screen. For details of the 2 types of messages see the Messages and Dialog boxes section.

If there are no Alert or Info messages a no messages dialog box will appear:



A complete list of Alert Messages is under Trouble Shooting section – see the Alert Messages in that section.

7.2.4 Project Pull-down Menu



7.2.4.1 Create New Project

Same as in Toolbox windowpane.

7.2.4.2 Open Project

Same as in Toolbox windowpane.

7.2.4.3 Save Project

Same as in Toolbox windowpane.

7.2.4.4 Copy Project

Same as in Toolbox windowpane.

7.2.4.5 Compile Project

Same as in Toolbox windowpane.

7.2.4.6 Download Project

Same as in Toolbox windowpane.

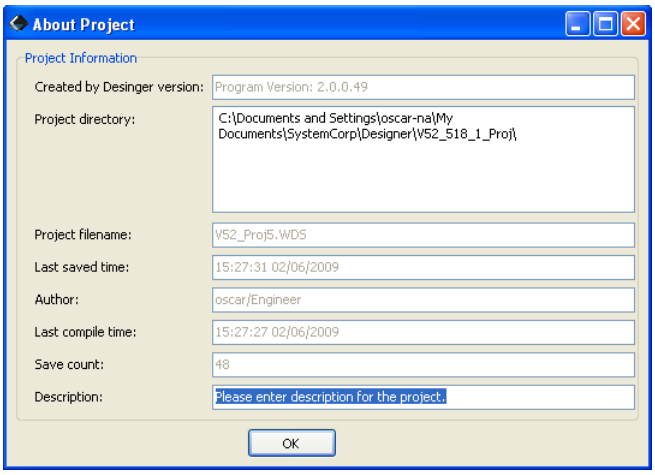
7.2.4.7 Print Project Report

Same as in Toolbox windowpane. See Print Section.

7.2.4.8 Reopen Project

Displays a list of recent projects to open. User Administration “OpenProject” must be ☑ set.

7.2.4.9 *About Current Project*



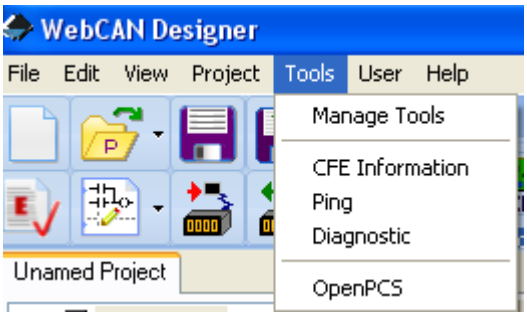
← Shows WDS version that created this project.

← Shows complete path to this project.

← Show the current project file name.
← Show last time and date the file was saved.
← Show username and access group of creator.
← Show the last time project was checked.
← Show the number of times file saved.
← Show any description that has been entered.

Figure 7-2 – About Current Project

7.2.5 Tools Pull-down Menu



← Pull-down Menu items described in WebCAN Designer Tool section.

Depending upon the WDS configuration, the Tools menu may or may not have OpenPCS and/or ICD Designer.

For all the menu selections to appear, the appropriate User Administration settings “ToolsConfig” must be set “☑”. See User Administration Group Access Rights section for more information.

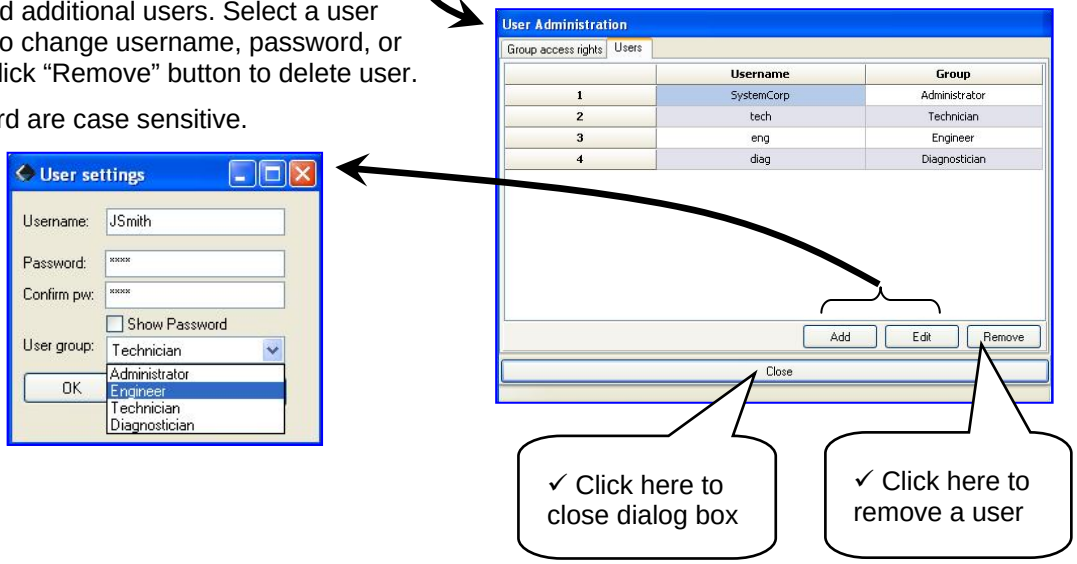
7.2.6 User Pull-down Menu

7.2.6.1 User Administration

An Administrator has access or User Administration "UserAdmin" must be ☑ set.

Click "Add" button to add additional users. Select a user then click "Edit" button to change username, password, or user group access; or click "Remove" button to delete user.

Username and Password are case sensitive.



There are 4 User types of users (or Groups) with the default settings:

- **Administrator** – has full access and cannot be changed.
- **Engineer** – Similar to Administrator but cannot add or edit users.
- **Technician** – Can only edit, save, print, and run diagnostics.
- **Diagnostician** – Can only open, print, and run diagnostics.

The access definitions for the Engineer, Technician, and Diagnostician may be altered by the Administrator or by any user with the group access item UserAdmin ☑ ticked.

Administrator Access Rights are all ☑ ticked and unable to be un-tick. The Administrator has access to all features and cannot be changed.

Engineer Access Rights are all ☑ ticked except UserAdmin. The Engineer default is identical to an Administrator except they cannot add, edit, or change users or these group access rights.

Technician Access Rights are all ☑ ticked except NetworkSetup, UserAdmin,ToolsConfig, or UpdateEDS. The Technician default does not have the ability to create new projects but has the ability to edit existing projects. They cannot add, edit, or change users or these group access rights. Prevention of configuration and updating of the WDS working environment and changing CFE IP addresses are also part of the default technician.

Diagnostician Access Rights OpenProject, Printing, and Diagnostic are the only ☑ ticked items. The default Diagnostician has no ability to create, edit, or save a project. They only have the ability open existing projects, print, and run diagnostics.

At any time, any user that has User Administration rights can enter and change the permissions associated with the four types of users.

7.2.6.2 *Group Access Rights are NOT mutually exclusive*

NetworkSetup is a subset of EditTable. In other words, if EditTable is not enabled (not ticked) then enabling or disabling NetworkSetup is unnecessary because EditTable will prevent the editing of the CFE Parameters.

UpdateEDS is a subset of CreateProject. In other words, if CreateProject is not enabled (not ticked) then enabling or disabling UpdateEDS is unnecessary because CreateProject prevents the importing and exporting of the EDS.

DownloadProject is a subset of SaveProject. In other words, if SaveProject is not enabled (not ticked) then enabling or disabling DownloadProject is unnecessary because SaveProject prevents the downloading of a project.

UploadProject is a subset of OpenProject. In other words, if OpenProject is not enabled (not ticked) then enabling or disabling UploadProject is unnecessary because OpenProject prevents the opening of a project.

In addition, several functions (e.g. Printing and Diagnostics) perform an error check (CompileProject) regardless if CompileProject is enabled or disabled. These checks need to be performed. Prevent a user from saving (SaveProject) if a re-compiled project is not to be saved.

When the “Load Default Settings” button is clicked the following default settings are ticked ☑:

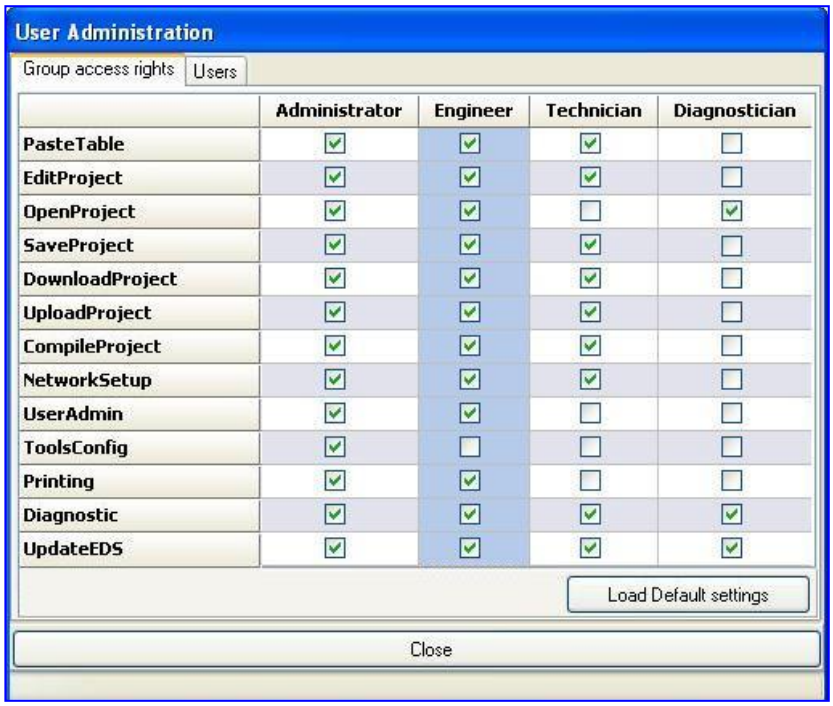


Figure 7-3 – User Administration Group Access Rights Default Settings

The follow table describes each of the “Group Access Rights” items:

Access Rights keyword	Description when NOT ticked ☐	Description when Ticked ☑
PasteTable	Unable to Paste anything to Object Settings window.	May Past anything to Object Settings window.
EditProject	Unable to Create or Edit a Project. Icon and menu items unavailable.	May Create or Edit a Project. Icon and menu items available.
OpenProject	Unable to Open or Reopen any Project. Icon and menu items unavailable.	Able to Open or Reopen any Project. Icon and menu items available.
SaveProject	Unable to Save any Project. Icon and menu items unavailable.	Able to Save any Project. Icon and menu items available.
DownloadProject	Unable to Build and Download any Project. Icon and menu items unavailable.	Able to Build and Download any Project. Icon and menu items available.
UploadProject	Unable to Upload Project from CFE. Icon and menu items unavailable.	Able to Upload Project from CFE. Icon and menu items available.
CompileProject	Unable to error check (compile) a Project. Icon and menu items unavailable.	Able to error check (compile) a Project. Icon and menu items available.
NetworkSetup	Unable to Edit CFE Object Parameters window.	Able to Edit CFE Object Parameters window.
UserAdmin	Unable to Edit User Administration. Menu item unavailable.	Able to Edit User Administration. Menu item available.
ToolsConfig	Unable to Edit Tools Configuration. Menu item unavailable.	Able to Edit Tools Configuration. Menu item available.
Printing	All Printing Disabled.	All Printing Available.
Diagnostic	Unable to use Diagnostics. Icon and menu items unavailable.	Able to use Diagnostics. Icon and menu items available.
UpdateEDS	Unable to Import/Export EDS. File menu items unavailable.	Able to Import/Export EDS. File menu items available.

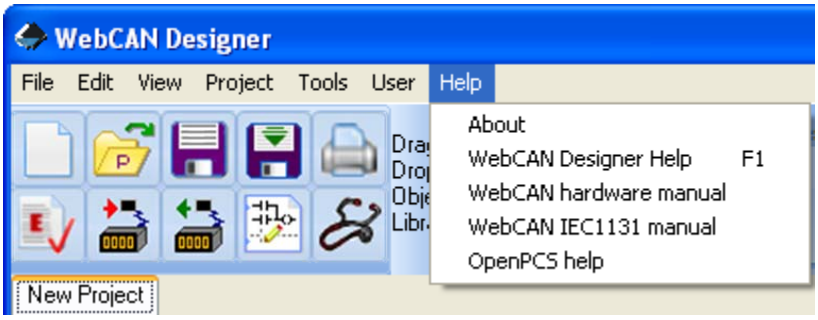
Table 7-1 – User Administration “Group Access Rights” Keyword Descriptions

Also see User Administration user walk-through section.

7.2.6.3 *Logout*

Logs out current user and returns to login dialog box.

7.2.7 *Help Pull-down Menu*



← Help pull-down Menu items offer user information and assistance.

7.2.7.1 *About*

← WebCAN Designer Studio version.
← EDS and DLL versions.
← Build date and Library database

Figure 7-4 – About WebCAN Designer Studio Version Window

7.2.7.2 *WebCAN Designer Help*

Open this PDF document.

7.2.7.3 *WebCAN Hardware Manual*

Open WebCAN Hardware Description and User Manual PDF document.

7.2.7.4 *WebCAN IEC1131 Manual*

Open WebCAN IEC61131 PLC User Manual PDF document.

7.2.7.5 *OpenPCS Help*

Open InfoTeam OpenPCS Programming System User Manual PDF document.

7.3 Context Specific (Right-Mouse Click) Pop-up Menus

The right mouse button displays context specific pop-up menus.

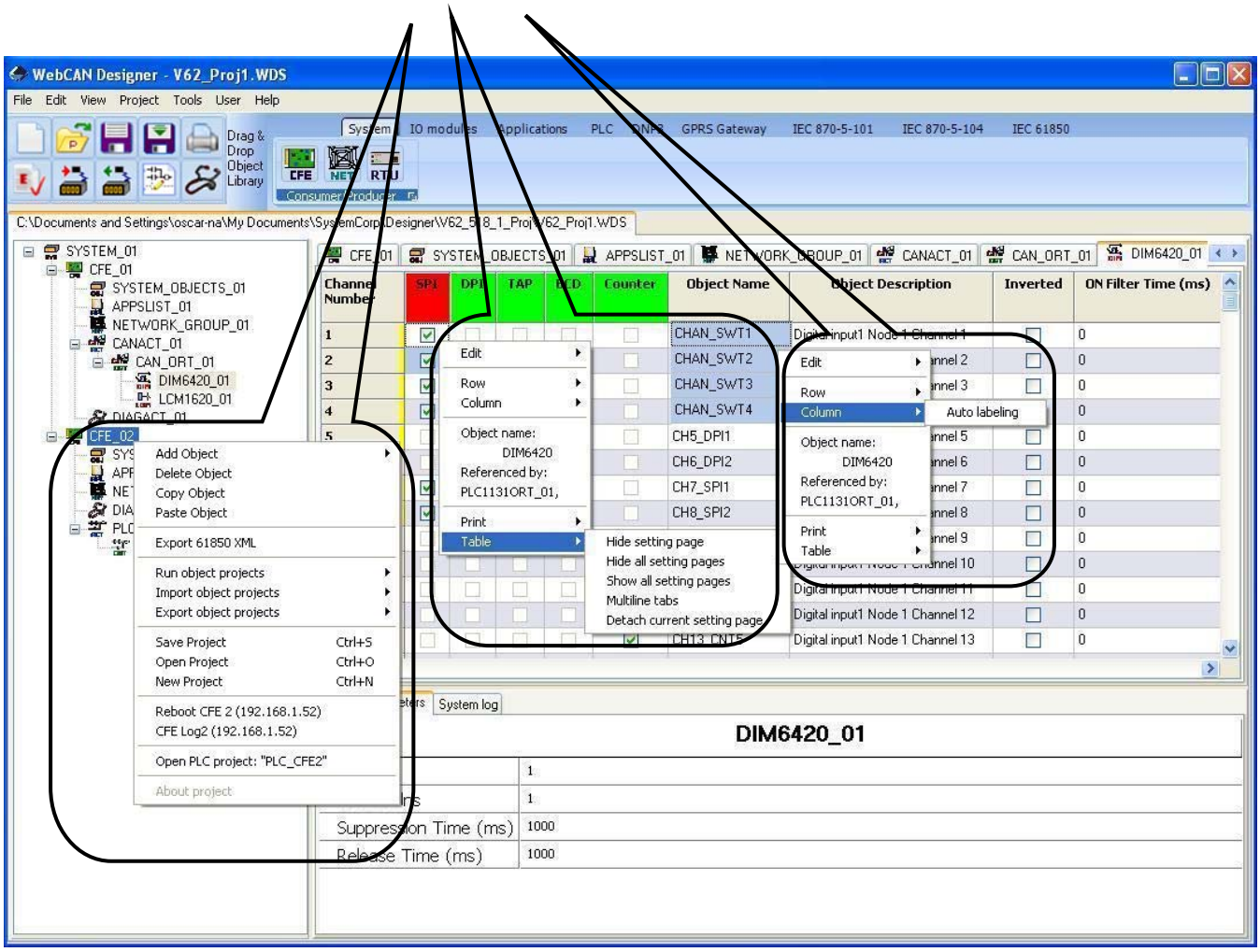
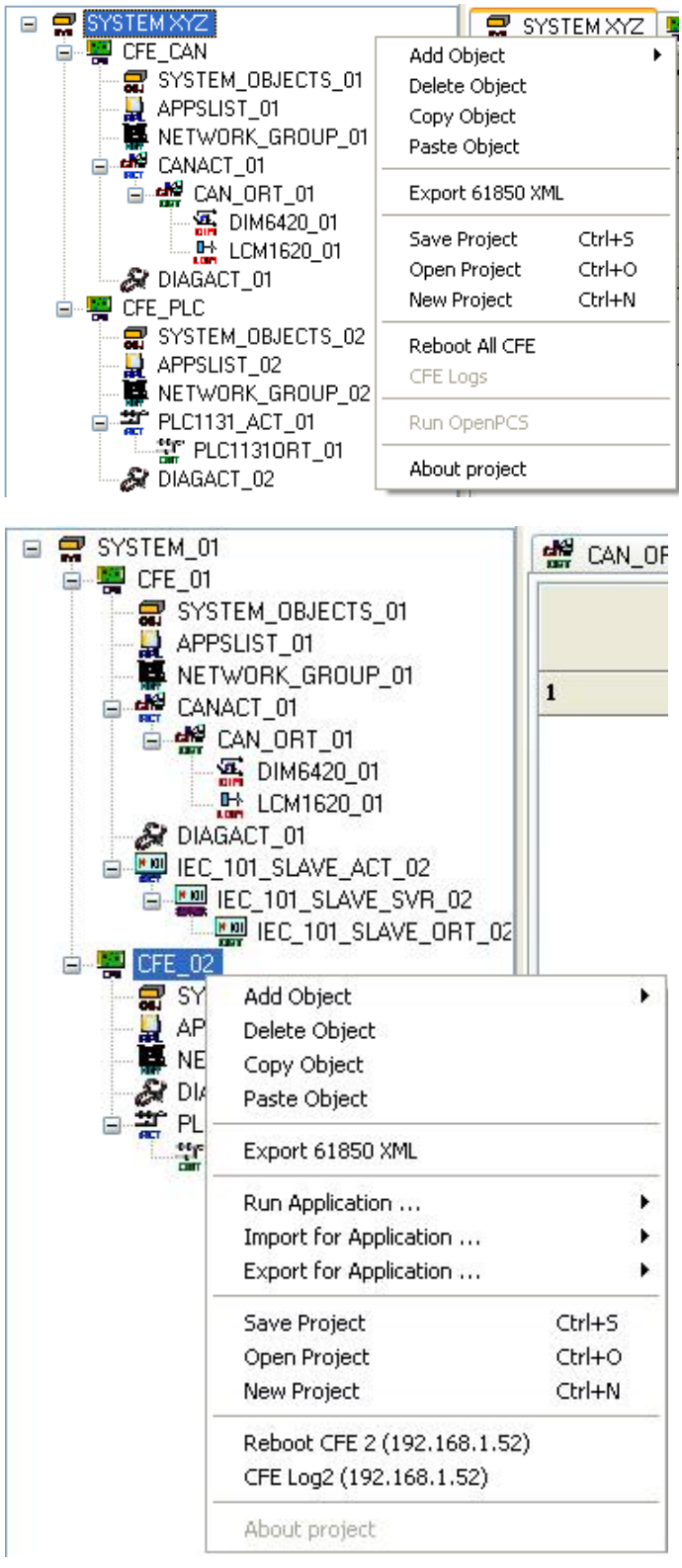


Figure 7-5 – Context Specific (Right-mouse click) Pop-up Menus

7.3.1 *Project Windowpane Pop-up Menu*



User Administration “EditProject” must be ☑ set.

7.3.1.1 *Add Object*

An alternate procedure to adding objects by dragging them objects from ***Object Library*** windowpane. Only the context appropriate objects will be presented on sub-menu.

7.3.1.2 *Delete Object*

Removes object from project

7.3.1.3 *Copy Object*

Copies objects to clipboard.

7.3.1.4 *Paste Object*

Pastes objects from clipboard.

7.3.1.5 *Protocol Export & Update (if any)*

Depending on what protocols, if any, are part of the WDS installation, XML data can be exported. Also Updating project if external changes occur.

7.3.1.6 *Run Application…*

Context dependent upon selected CFE. Will run application depending upon object(s). For example, “Run Application…” cascades to “OpenPCS”.

7.3.1.7 *Import for Application…*

Context dependent upon selected CFE. Will import data for an application depending upon object(s). For example, “Import for Application…” cascades to “OpenPCS”.

7.3.1.8 *Export for Application…*

Context dependent upon selected CFE. Will export data for an application depending upon object(s). For example, “Export for Application…” cascades to “OpenPCS”.

7.3.1.9 *Save Project*

Same as selecting the Save icon or the Project / Save Project pull-down menu item described above.

Figure 7-6 – Project Windowpane right-click context pop-up menus

7.3.1.10 *Open Project*

Same as selecting the Open icon or the Project / Open Project pull-down menu item opens a project.

7.3.1.11 *New Project*

Same as selecting the New icon or the Project / New Project pull-down menu item opens blank project.

7.3.1.12 *Reboot CFE(s)*

Context dependent upon where in the ***Project windowpane*** all or a specific CFE can be rebooted on the project's target hardware.

7.3.1.13 *CFE Logs*

Context dependent upon the selected CFE, the CFE run log becomes a selectable tab in ***Object Parameters*** windowpane (i.e. there is a terminal window tab in the Object Parameter's windowpane.

7.3.1.14 *About Project*

Same as selecting the Help / About Project pull-down menu item describes details of the project.

7.3.2 Object Settings Windowpane Pop-up Menu

This pop-up menu is context dependent on having the mouse cursor in the Object Settings windowpane when the right-mouse button is clicked.

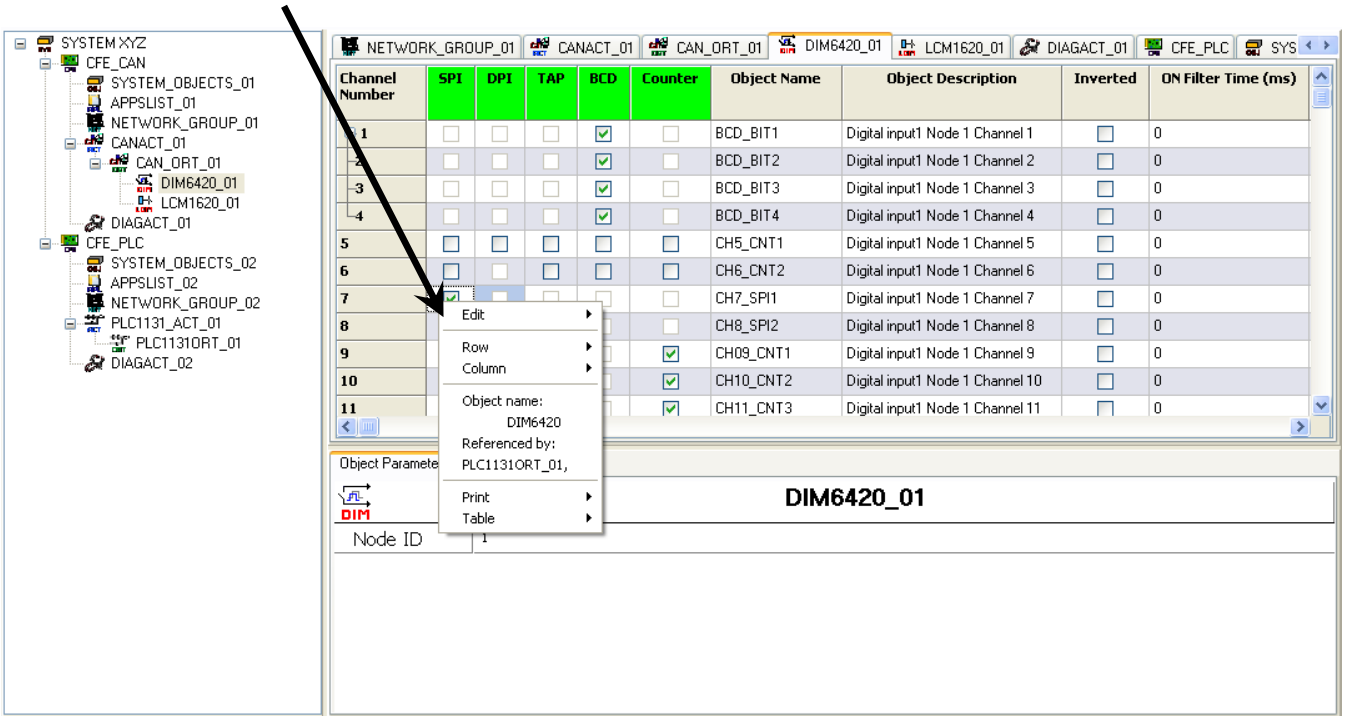
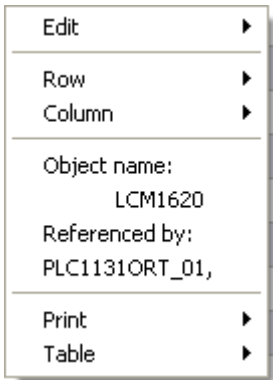


Figure 7-7 – Object Settings Windowpane right-click context pop-up menus



← Edit sub-menu

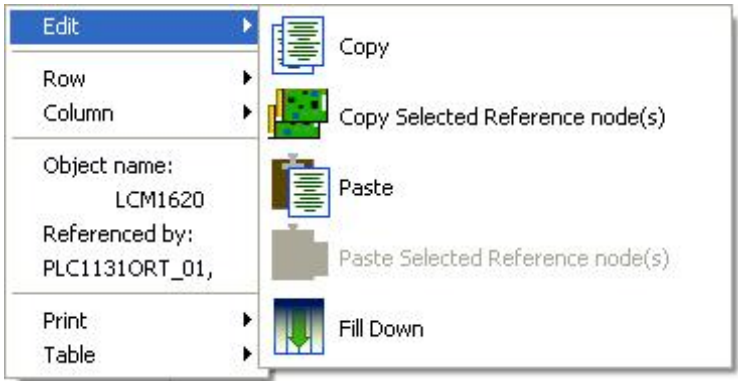
← Row sub-menu
← Column sub-menu

← The pop-up menu displays the context specific information.

← Print sub-menu
← Table sub-menu

7.3.2.1 *Edit*

Same as Edit pull-down menu.



← Copy selected items (text in field)

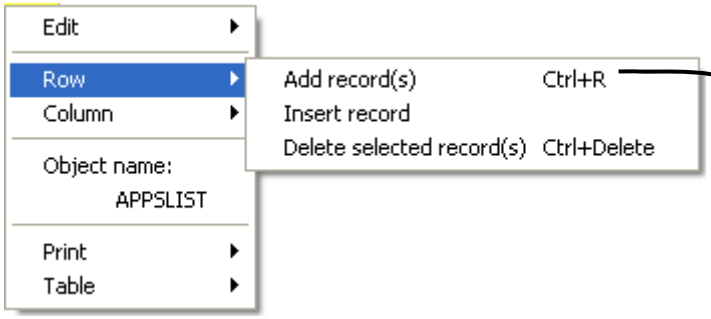
← Copy selected node references

← Paste (text) from clipboard

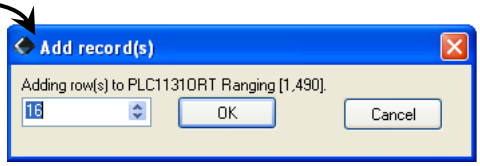
← Paste from clipboard (if node data)

← Fills table column with the first selected cell contents

7.3.2.2 *Row*



Add Record(s)



Add multiple rows to Object Settings reference table.

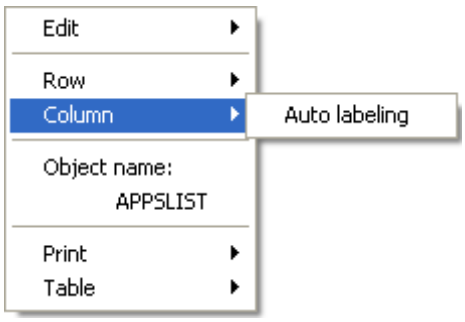
Insert record

Add single row to Object Settings reference table.

Delete Selected Record(s)

Selected row(s) are removed from Object Settings table.

7.3.2.3 *Column*



Auto Labelling

Context dependent upon selecting cells in a column in the ***Object Settings*** windowpane, sequences of textual data can be edited. For additional user information, see Auto Labelling in WDS Step-by-Step section.

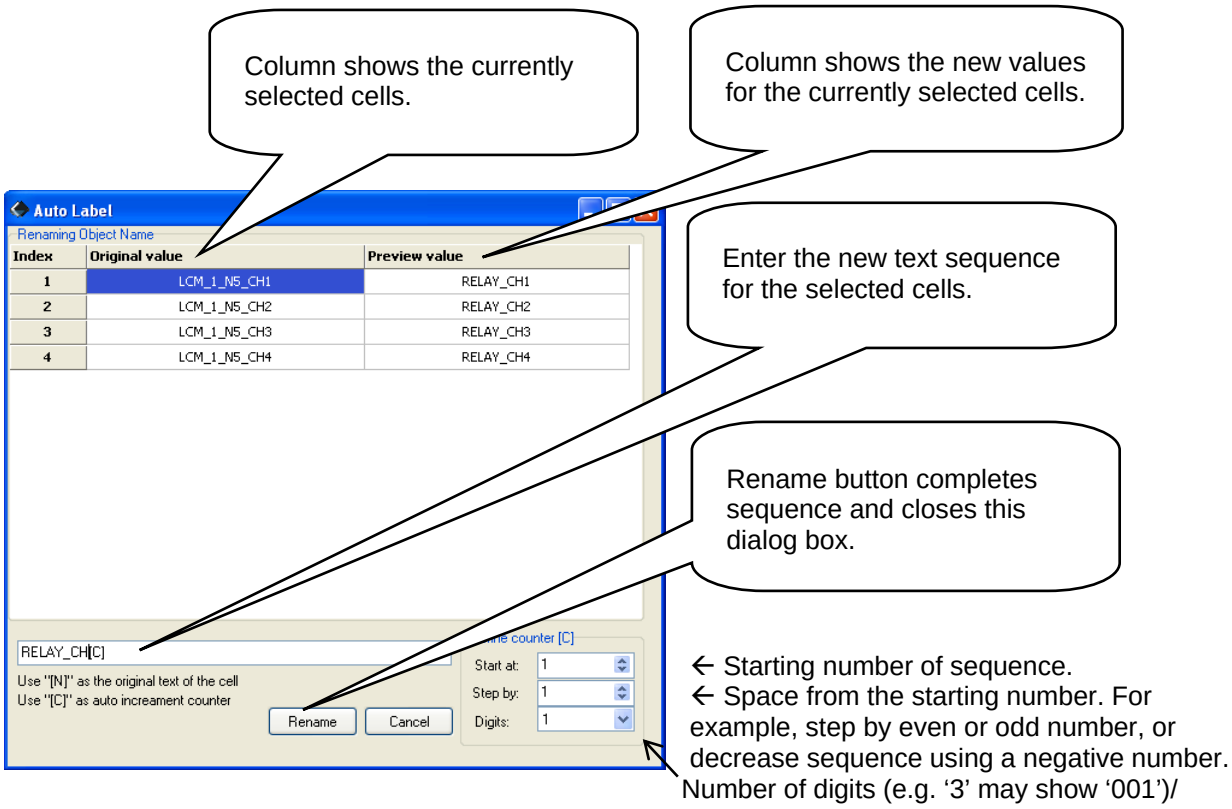
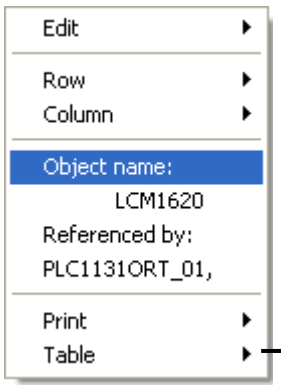

Column shows the currently selected cells.
Column shows the new values for the currently selected cells.
Enter the new text sequence for the selected cells.
Rename button completes sequence and closes this dialog box.
Auto Label
Renaming Object Name
Index
Original value
Preview value
1 LCM_1_N5_CH1 RELAY_CH1
2 LCM_1_N5_CH2 RELAY_CH2
3 LCM_1_N5_CH3 RELAY_CH3
4 LCM_1_N5_CH4 RELAY_CH4
RELAY_CH[C]
Use "[N]" as the original text of the cell
Use "[C]" as auto increament counter
Start at:
Step by:
Digits:
Rename
Cancel
← Starting number of sequence.
← Space from the starting number. For example, step by even or odd number, or decrease sequence using a negative number.
Number of digits (e.g. '3' may show '001')/

Figure 7-8 – Auto Labelling Dialog Box

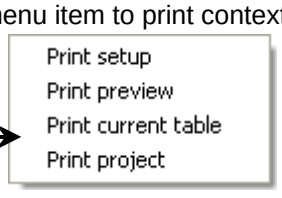
7.3.2.4 *Object Name / Referenced by*



Context dependent on what specific item mouse cursor is over when right-mouse button is clicked. This displays information about object and specific item.

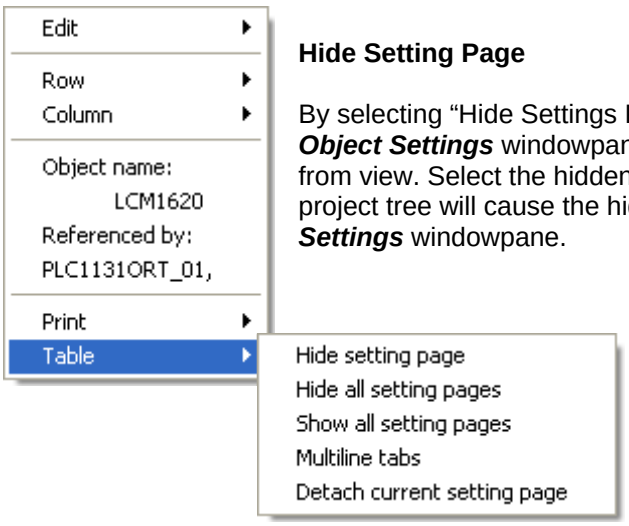
7.3.2.5 *Print*

Same as selecting the Print icon or Print pull-down menu item to print context specific table or project as well as print setup or preview. See Printer section for more information.



7.3.2.6 *Table*

A design project may contain numerous objects. The “Table” pop-up menu item is intended for managing the viewing of the ***Object Settings*** windowpane tables and tabs.



Hide Setting Page

By selecting “Hide Settings Page” will cause the current table to be hidden in the ***Object Settings*** windowpane. The object is still part of the project only hidden from view. Select the hidden object from the design in the ***Project Windowpane*** project tree will cause the hidden table to re-appear again in the ***Object Settings*** windowpane.

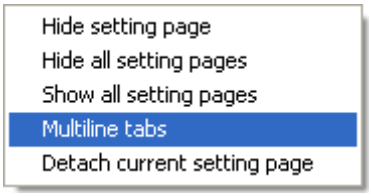
Hide All Setting Pages

By selecting “Hide All Settings Pages” will cause all the tables in the ***Object Settings*** windowpane to be hidden. The objects are still part of the project only hidden from view. Select individual hidden objects from the design in the ***Project Windowpane*** project tree will cause the hidden table to re-appear again in the ***Object Settings*** windowpane.

Show All Setting Pages

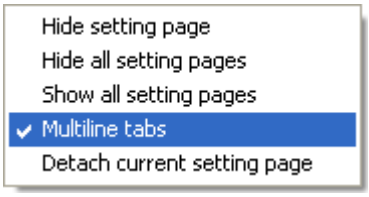
By selecting “Show All Setting Pages” will cause all hidden object settings to re-appear in the ***Object Settings*** windowpane.

Multiline Tabs



By selecting “✓ Multiline Tabs” will cause all the tabs for all the objects in the ***Object Settings*** windowpane to appear.

Alternately, by selecting “Multiline Tabs” will cause a linear list of tabs line across the top of the ***Object Settings*** windowpane with a scroll arrows on the upper-right side of the windowpane.

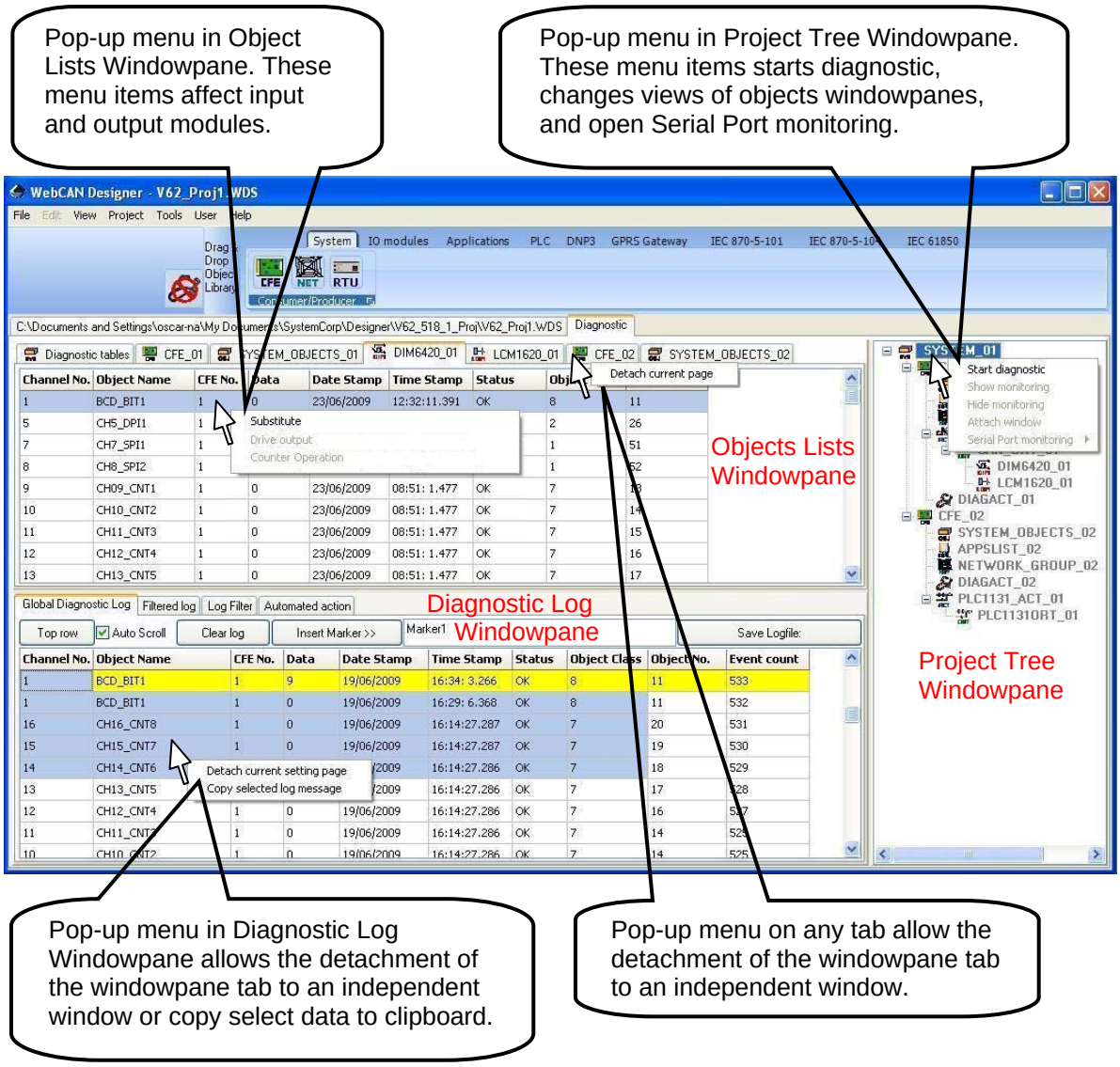


All the tabs appear at the top of the ***Object Settings*** windowpane.

Detach Current Setting Page

By selecting “Detach Current Settings Page” will cause the current table to be removed from the ***Object Settings*** windowpane and appear in an independent window.

7.3.3 *Diagnostic Context Specific (Right-Mouse Click)Pop-up Menus*


Pop-up menu in Object Lists Windowpane. These menu items affect input and output modules.
Pop-up menu in Project Tree Windowpane. These menu items starts diagnostic, changes views of objects windowpanes, and open Serial Port monitoring.
Objects Lists Windowpane
Diagnostic Log Windowpane
Project Tree Windowpane
Pop-up menu in Diagnostic Log Windowpane allows the detachment of the windowpane tab to an independent window or copy select data to clipboard.
Pop-up menu on any tab allow the detachment of the windowpane tab to an independent window.

Context Specific Pop-up Menus:

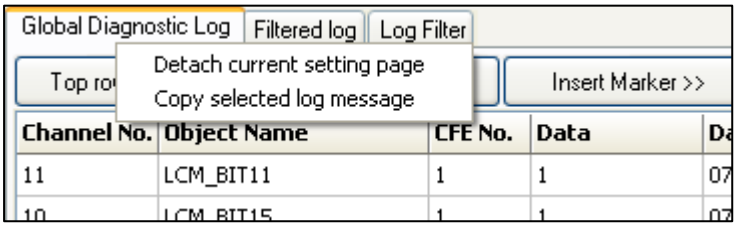
- On any tab a pop-up menu which allows the detachment of the windowpane tab into a separate window.
- On any Object channel in the Objects Lists Windowpane a pop-up menu which allows the manipulation of real and simulated data on the input and output modules.
- On the Diagnostic Log Windowpane a pop-up menu which allows the copying of the selected cells to a spreadsheet or other application as well as the detachment of the windowpane tab into a separate window.
- On the Project Tree Windowpane a pop-up menu which allows the start of diagnostics, changes views of objects windowpanes, and open Serial Port monitoring.

7.3.3.1 *Start Diagnostic*

By selecting, “Start diagnostic” from the pop-up menu in the ***Project Tree windowpane*** will cause the Diagnostics mode of operation to begin on the selected object or the entire system.

7.3.3.2 *Detach Current Page*

By selecting “Detach Current Page” or “Detach Current Settings Page” from the pop-up menu on a tab or in the ***Diagnostic log windowpane*** will cause the current tab to be removed and appear in an independent window.

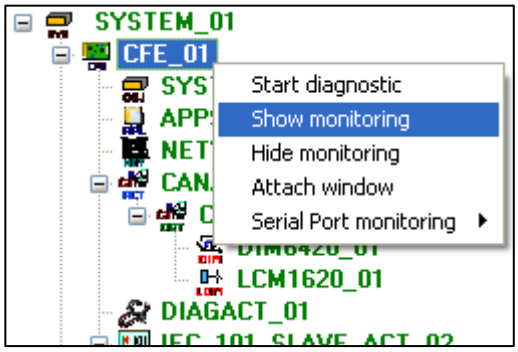


7.3.3.3 *Copy Selected Log Message*

By selecting “Copy selected log message” from the pop-up menu in the ***Diagnostic log windowpane*** will cause the current selection to be placed on the clipboard buffer to be pasted into another text or spreadsheet application.

7.3.3.4 *Show Monitoring*

By selecting “Show monitoring” from the pop-up menu in the ***Diagnostic log windowpane*** will cause the current object tab to appear in an independent window.



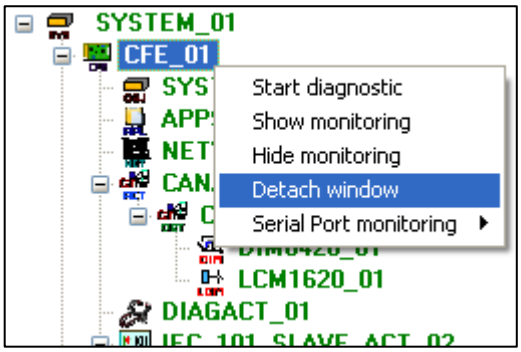
7.3.3.5 *Hide Monitoring*

By selecting “Hide monitoring” from the pop-up menu in the ***Diagnostic log windowpane*** will cause the current object tab or independent window to be hidden.

7.3.3.6 *Attach Window*

By selecting “Attach window” from the pop-up menu in the ***Project Tree windowpane*** will cause the current object to attach to a “Diagnostic” tab windowpane.

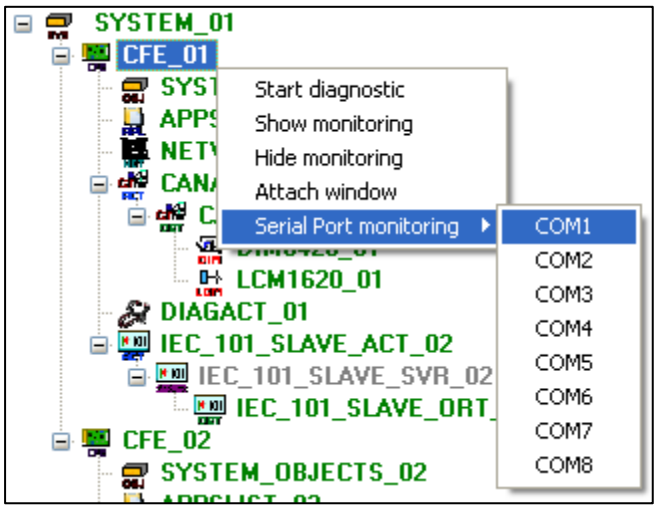
7.3.3.7 *Detach Window*



By selecting “Detach window” from the pop-up menu in the ***Project Tree windowpane*** will cause the current object to attach to a “Diagnostic” tab windowpane to be detached to an independent window.

7.3.3.8 *Serial Port Monitoring*

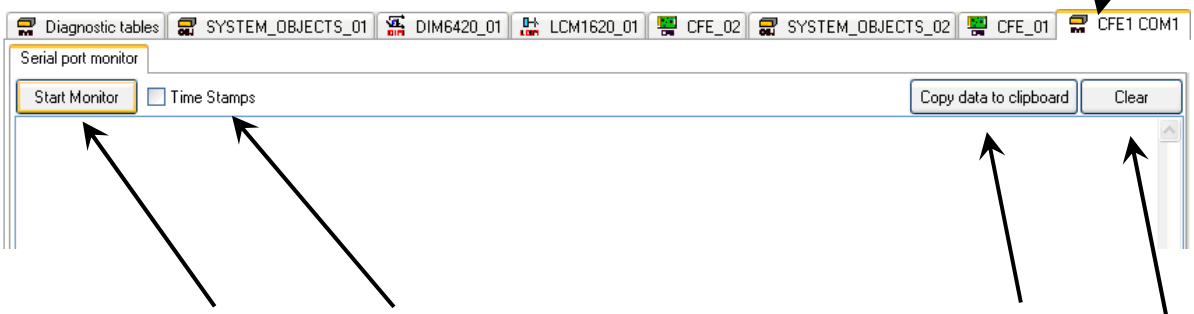
By selecting “Serial port monitoring” from the pop-up menu in the ***Project Tree windowpane*** will allow the Diagnostic session to monitor one of the CFE serial ports.



The Serial Port log files are kept in a sub-directory in the same folder as the diagnostic log. Both a text only file and an .RTF file with colour are created.

To Monitor data being transmitted and received through a serial port:
← 1) Select the serial port to monitor. In this example shows a CFE (ports 1-4) with an Serial Port Extension Module (ports 5-8).

A new Serial Port Monitoring tab will appear.



2) Click “Start Monitor” Button.

Optionally:

- Add Time Stamps into data stream which is also in serial log files.

All the data can be copied to the clipboard or by clicking on “Clear” button after “Stop Monitor” will empty the Serial port monitor.

3) View the data stream (Transmit in red and Receive is in green). When complete “Stop Monitor”.

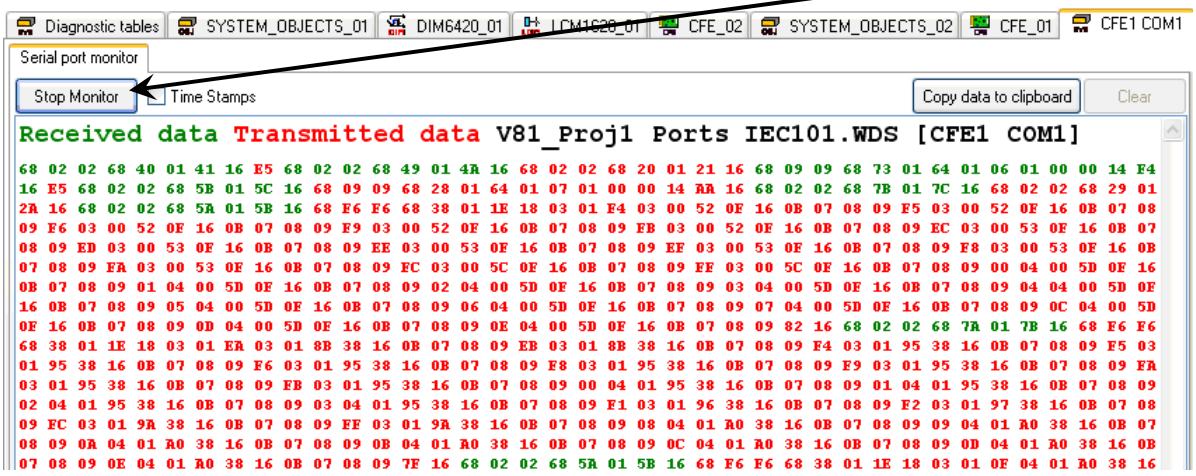
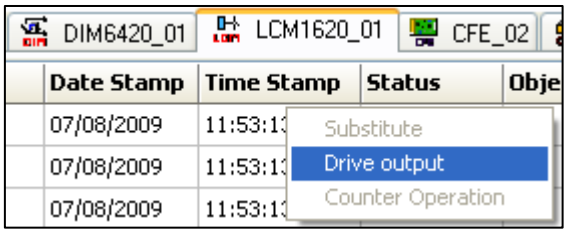


Figure 7-9 – Serial Port Monitoring

7.3.3.9 *Substitute*

The application of “Substitution” is used for testing the RTU before the station is commissioned and wired. This menu item is only available on input channels. For more information, see Substitute Input in the Diagnostic User Guide section.



7.3.3.10 *Drive Output*

“Drive output” forces a direct change to an Output module’s channel. Right-mouse click on channel in the ***Object List windowpane*** to directly drive an output value. This menu item is only available on output channels.

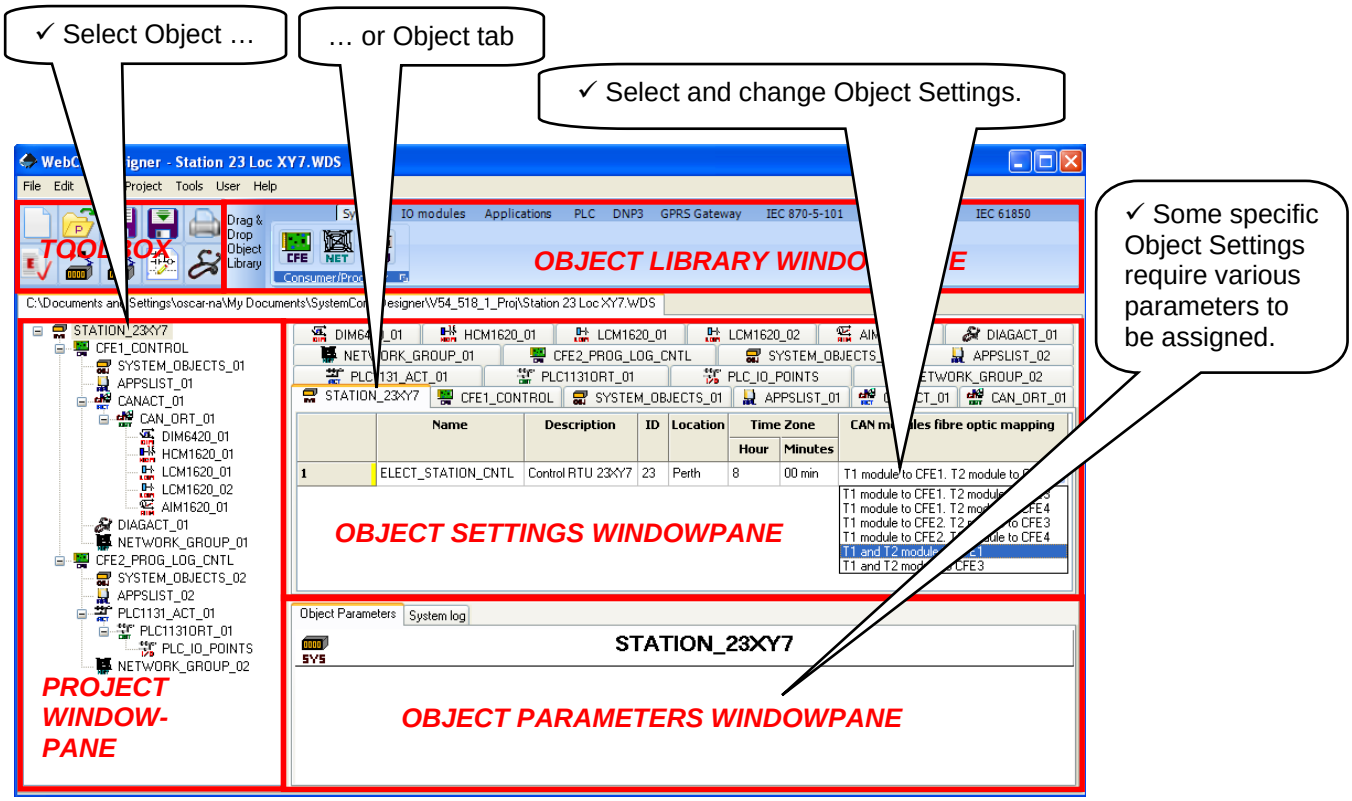
As an added security measure, the user forcing the actual output drive must login again by confirming their password. For more information, see Drive Output in the Diagnostic User Guide section.

7.3.3.11 *Counter Operation*

This diagnostic tool allows the viewing of the DIM (counter) accumulator. This menu item is only available on DIM counter channels. For more information, see Counter Operation in the Diagnostic User Guide section.

For more information, see the System Diagnostic User Guide section.

7.4 Objects, Object Settings and Parameters



See the specific OBJECT User Manual pages describing the Object, Object Settings and Parameters:

- Communications Front-End (CFE) Object
- Network (NET) Object
- Mini Remote Terminal Unit (RTU) Object
- CAN Application Configuration Table (CANACT) Object
- Direct Current (DC) Analog Input Module (AIM) Object
- Digital Input Module (DIM) Object
- Alternating Current (AC) Analog Input Module (ACM) Object
- High Current Output Module (HCM) Object
- Low Current Output Module (LCM) Object
- Diagnostic Object
- External Application (EXT) Object
- PLC Application Configuration Table (ACT) Object
- PLC Input/Output (I/O) Object
- Protocol Client / Server Objects
    - From the numerous protocols, see the appropriate manuals. For example, see the IEC61850, DNP3, GPRS, IEC870-5-101 manuals.

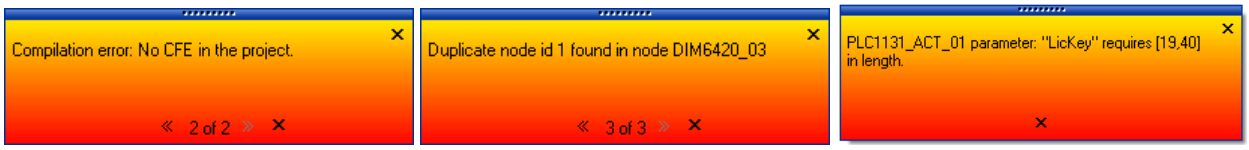
7.5 Messages and Dialog boxes

WebCAN Designer Studio issues 2 types of messages that appear in the lower right-hand corner of the screen:

1. Alert messages
2. Informational messages

By selecting “Alert messages” or “Info messages” from the View pull-down menu from the current project can retrieve these messages at any time and it will appear again in the lower right-hand corner of the screen.

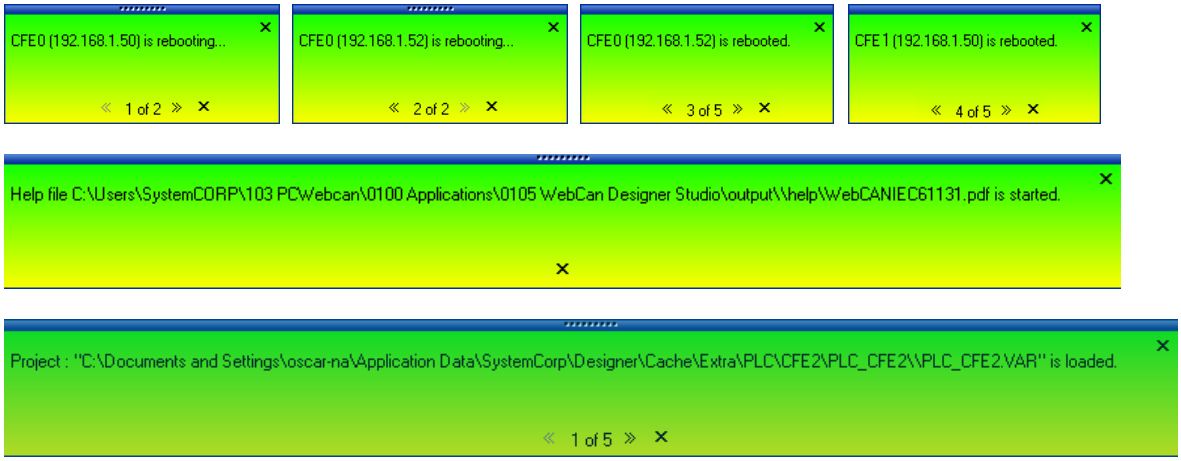
The “Alert messages” are in orange-red and require an action or task to be completed. For example:


Compilation error: No CFE in the project.
« 2 of 2 »
Duplicate node id 1 found in node DIM6420_03
« 3 of 3 »
PLC1131_ACT_01 parameter: "LicKey" requires [19,40] in length.

These message examples refer to no CFE being in the project, duplicate node number being used, and the PLC license key being incorrect. These orange-red error messages must be fixed prior to downloading design.

For a complete list of Alert Messages, see Alert Messages, Description, and Suggested Solutions table under Trouble-Shooting in next section.

The “Informational messages” are in green-yellow, are issued to offer activities and actions being taken, and require no action to be taken. For example:


CFE0 (192.168.1.50) is rebooting...
« 1 of 2 »
CFE0 (192.168.1.52) is rebooting...
« 2 of 2 »
CFE0 (192.168.1.52) is rebooted.
« 3 of 5 »
CFE1 (192.168.1.50) is rebooted.
« 4 of 5 »
Help file C:\Users\SystemCORP\103 PCWebcan\0100 Applications\0105 WebCan Designer Studio\output\\help\WebCANIEC61131.pdf is started.
Project : "C:\Documents and Settings\oscar-na\Application Data\SystemCorp\Designer\Cache\Extra\PLC\CFE2\PLC_CFE2\\PLC_CFE2.VAR" is loaded.
« 1 of 5 »

The above messages refer to the process of CFEs rebooting, CFEs rebooted completion, opening a PDF help file, and the last message opening the OpenPCS application for the PLC in CFE2.

Other dialog boxes appear depending upon context:

- About dialog box
- About Current Project dialog box
- Column Auto Labelling dialog box
- DIM TAP Position dialog box
- DIM BCD digit specifications dialog box
- Print Report dialog boxes
- Diagnostics Substitute dialog box
- Diagnostics Drive Output dialog box
- Row Add Records dialog box
- Upload project from CFE dialog box
- User Administration User settings and Group Access Rights dialog box

8 Trouble Shooting

8.1 Alert Messages

This section contains Alert (error and issue) Messages the may occur and their meaning.

Table 8-1 – Alert Messages, Description, and Suggested Solutions

Alert Messages	Description and Solution
Warning: duplicate names on [OBJECT]	Attempted to rename objects to a existing object of the same name. Check for redundant object names.
System object cannot be deleted.	Attempted to remove System. The System Object is not removable.
Error reading Grouping parameter in [OBJECT]	Error in EDS. Import up to date EDS database. Recreate project.
Maximum number of [FIELD-VALUE-MAX#] is reached.	Attempted illegal value place in field. Check limit. Change field value.
Minimum of 4 bits are required for BCD.	Attempted illegal creation for BCD because of lack of available channels. BCD must be a multiple of 4 bits (+1 for strobe).
BCD can only be configured in the first 32 channels or the last 32 channels.	Attempted illegal creation for BCD. BCD must start a channel 1 or end on channel 64 and be a multiple of 4.
Not enough channels for the assignment. Try to disable the stroke.	Attempted to assign more channels than are available. Check the number of desired channels and the remaining free channels.
Maximum number of rows [FIELDS] reached for Object: [OBJECT-VALUE]. Add row(s) is not allowed.	Attempted to assign more channels than are available. Check the remaining free channels.
The first [MIN#] row in object: [OBJECT-VALUE] is not allowed to be deleted.	Attempted to remove an unremovable object. Do not delete.
Minimum number of rows [MIN#] reached for Object: [OBJECT-FIELD-VALUE]. Delete row is not allowed.	Attempted to remove minimal number of rows. Do not delete.
List items cannot be renamed.	Attempted to rename selection using Auto Labelling that cannot be auto labelled. Do not rename. Select appropriate fields for Auto Labelling.
Please select a column of cells first.	Attempted Auto Labelling without selecting appropriate fields. Make an appropriate selection.
The value is out of range: [MIN#, MAX#] --> [OBJECT-FIELD]	Attempted Auto Labelling with an illegal setting out of range. Change Count definition settings.
The string is too long: [FIELD]	Attempted to create a field with too many text characters. Use less characters.
Maximum number of rows [FIELD] reached for object [OBJECT].	Attempted to create more rows of settings then allowed. Check the maximum limits.
Wrong file format for Project: [PROJECT]	Attempted to open project that is not a WDS file or file corrupt. Open an appropriate WDS file or recreate project.
Error loading Project: [PROJECT]	Attempted to open WDS project file. Check that a protected file exists, that directory path exists, or device path/file is online.
OpenPCS is not installed in this computer, the PLC objects in this project might not be functional.	Attempted to open OpenPCS which is not installed. Install Infoteam OpenPCS.
Fatal error: [OBJECT_NAME] not found in the object library.	Attempted to create invalid object version from object library. EDS version not compatible. Import appropriate

	EDS database version. Recreate project.
Error opening object: [OBJECT]	Attempted to open an object that is invalid version in EDS. EDS version not compatible. Import appropriate EDS database version. Recreate project.
Wrong file format for Project: [PROJECT]	Attempted to open project that is not a proper WDS format.
Error cleaning up directory: [DIRECTORY]	Check if a protected directory exists, that directory path exists, or device path/file is online.
Error staring process : [TOOL/APPLICATION]	Attempted to open tool or application. Check that tool or application exists and loaded properly.
[MESSAGE] not found in Object: [FIELD] Parameter: [PARAMETER]. Default value: [VALUE] is used.	Different EDS version. EDS version not compatible. Import appropriate EDS database version. Recreate project.
[FIELD-PARAMETER] is ranging between [MinVALUE,MaxVALUE].	Attempted to make illegal setting value. Check the value limits.
[PARAMETER] is ranging between [MinVALUE,MaxVALUE].	Attempted to make illegal setting value. Check the value limits.
Error: Duplicate object name: [OBJECT_NAME].	Project contains objects with duplicate name(s) within the project. Rename object(s).
Error: Duplicate point name: [NAME]	Project contains channel with duplicate name(s). Rename channel.
Error: Duplicate application name: [APPLICATION_NAME]	Project contains External Application object(s) with duplicate name(s). Rename application object.
Error: Duplicate network name: [NETWORK_NAME]	Project contains an object network name(s) with duplicate name(s). Rename network object.
Object reference not found : [ROW_REFERENCE_NAME]	Attempted to reference a non-existing reference name. Do not hand edit field. Check the object name referenced using reference dialog box.
Error: reference node [NODE#] not found in object [OBJECT_NAME]	Object does not have appropriate node number. Do not hand edit field. Check the object name referenced using reference dialog box.
Error: reference node not found in object [OBJECT_NAME]	Object does not have appropriate node number. Do not hand edit field. Check the object name referenced using reference dialog box.
No PLC object is created in this project.	Attempted to open OpenPCS with project not containing a PLC. Place PLC object as required.
[PROJECT_NAME] Please generate the project files using Project Download.	Download project files missing. Recreate with Project Download.
[PLC_NAME] is not generated. Please generate the project files using Project Download.	PLC files missing. Recreate POE files with Project Download.
Error generating node. [BIN] with error code [NUMBER]	Error converting CFG to BIN. Check DLL version (Help/About). Confirm that DLL and WDS versions are compatible with SystemCorp.
Error generating [BIN] with error code [NUMBER]	Error converting CFG to BIN. Check DLL version (Help/About). Confirm that DLL and WDS versions are compatible with SystemCorp.
Error generating [OUTPUT] file for [CFG]. [NUMBER] records converted.	Error converting CFG to BIN. Check DLL version (Help/About). Confirm that DLL and WDS versions are compatible with SystemCorp.
Error generating XML/BIN file for [CFG]. Error code: [NUMBER].	Error converting CFG to BIN. Check DLL version (Help/About). Confirm that DLL and WDS versions are compatible with SystemCorp.
Error generating ASC file for [CFG]. Error code: [NUMBER]	Error converting CFG to BIN. Check DLL version (Help/About). Confirm that DLL and WDS versions are compatible with SystemCorp.
Error generating POE file for [CFG]. Error code: [NUMBER]	Error converting CFG to BIN. Check DLL version (Help/About). Confirm that DLL and WDS versions are compatible with SystemCorp.

Error generating BIN file for [CFG]. Error code: [NUMBER]	Error converting CFG to BIN. Check DLL version (Help/About). Confirm that DLL and WDS versions are compatible with SystemCorp.
[NODE] parameter: [FIELDS] requires [MinVALUE,MaxVALUE] in length.	Attempted to create parameters outside of node limits. Check parameter minimum and maximum field length limits. E.g. License Key
Duplicate CFE number [NUMBER] found in node [NAME_NAME]	Project contains CFE(s) with duplicate numbers(s). Change CFE number(s).
Duplicate CFE IP [IP_ADDRESS]	Project contains CFE(s) with duplicate IP address(es). Change IP address(es) on CFE(s).
Duplicate node id [NUMBER] found in node [NUMBER]	Project contains CFE(s) with duplicate module node ID(s). Change node ID(s) used within the CFE to be unique.
Compilation error: No CFE in the project.	Project does not contain a CFE. Place and configure CFE(s).
Error staring process : [TOOL/APPLICATION]	Attempted to open tool/application which is not installed properly. Re-install tool/application.
OpenPCS is not configured.	Attempted to open OpenPCS which is not installed properly. Install Infoteam OpenPCS.
CFE [IP_ADDRESS] is connected, but unable to diagnostic.	Attempted to open Diagnostic. Check IP address correct and CFE online (Tools/CFE Information). Check hardware connection.
To start the current PLC project, please compile and generate the project configuration files.	Attempted to open OpenPCS. Re-build project and create POE files.
Project : [DIRECTORY/FILE] is not generated. Please generate the project files using Project Download function.	Attempted to create file. Check if a protected file exists, that directory path exists, or device path/file is online.
Objects are copied from object [OBJECT]	Attempting to paste a non-object in Project windowpane. Right-click copy appropriate object and paste, or place new object from library.
Maximum number of monitoring COM port [COMPORT] on CFE [CFE#] is reached.	Attempted to monitor more CFE COM ports than allowed. Check hardware and maximum limits.
CFE [IP_ADDRESS] is connected, but unable to diagnostic. Error code: [#]	Attempted to open Diagnostic. Check that CFE is online. Check IP address. Restart WebCAN Designer Studio.
Error connecting to CFE [CFE#] [IP_ADDRESS]	Attempted to download to CFE(s). Check that CFE(s) is online (Tools/CFE Information). Check IP address. Restart network.
Error loading copied objects.	Attempted to copy objects. Use right-mouse click "copy object" and re-"paste object".
Item: [OBJECT] version mismatch.	Attempting to copy an incompatible EDS version object in Project windowpane. Reload appropriate EDS database.Right-click copy appropriate object and paste, or place new object from library.
Item: [OBJECT] not found.	Attempting to select an incompatible EDS version object in Project windowpane. Or, library object in paste buffer (clipboard) is out of date. Reload appropriate up to date EDS database. Right-click copy appropriate object and paste, or place new object from library.
Failed to paste [OJBECT] under [PARENT_OBJECT]	Attempting to paste an incompatible EDS version object in Project windowpane. Library object in paste buffer (clipboard) is out of date. Reload appropriate EDS database.Right-click copy appropriate object and paste, or place new object from library.
[NAME] is not under the same category as [PROJECT_NAME]	Not allowed to mix different product groups. Or, library object in paste buffer (clipboard) is incompatible. In Project windowpane right-click copy appropriate object

	and paste.
The maximum number of children is for [PROJECT_NAME] is limited at [MAX#]	Attempting to place more object than allowed under given object. Place only the limit number.
The maximum number of sibling [MAX#] reached for object [OBJECT] [OBJECT_NAME]	Attempting to place more object than allowed under given object. Place only the limit number.
Please configurate the automation in diagnostic data window before proceeding.	Automation list is empty. Add automation data before proceeding.
CAN Command port for [OBJECT_NAME] is zero, operation skipped.	Check CAN command port available. Check with WDS Administrator or SystemCorp.
Warning: duplicate names on [OBJECT]	Attempted to remame objects to a existing object of the same name. Check for redundant object names.
System object cannot be deleted.	Attempted to remove System. The System Object is not removable.
Error reading Grouping parameter in [OBJECT]	Error in EDS. Import EDS database. Recreate project.
Maximum number of [FIELD-VALUE-MAX#] is reached.	Attempted illegal value place in field. Check limit. Change field value.
Minimum of 4 bits are required for BCD.	Attempted illegal creation for BCD because of lack of available channels. BCD must be a multiple of 4 bits (+1 for strobe).
BCD can only be configured in the first 32 channels or the last 32 channels.	Attempted illegal creation for BCD. BCD must start a channel 1 or end on channel 64 and be a multiple of 4.
Not enough channels for the assignment. Try to disable the stroke.	Attempted to assign more channels than are available. Check the number of desired channels and the remaining free channels.

8.2 Issues / Solutions

Common Issue: User does not have proper access rights - see User Administration.

8.2.1 Objects Issue / Solutions

ID	Object Problem	Solution
1	Unable to drag and drop another Object from the ***Object Library*** – the cursor becomes a NO "⃠" dropping symbol.	All Objects automatically check for illegal configurations. All Objects are cascaded from the root system (e.g. the parent "SYSTEM_01" is to the maximum of 4 CFE children). Every Object may cascade to other Objects (e.g. the CFE can be parent to the CANACT, Diagnostic, or PLCACT children objects). 1 –Check that the Object belongs to or is part of the construction of another Object. 2 – Check if the maximum number of objects have been reached. 3 – Use right mouse-click context specific pop-up menu "Add Object…" to see only the appropriate objects associated with a specific object. 4 – Unable to drag and drop objects when running diagnostics. Exit Diagnostic mode.
2	The Maximum number of siblings [#] reached for Object [OBJECT]	An attempt to drag and drop a number of Object(s) greater than allowed for the parent Object (also see Objects Issue ID 1).
3	Unable to tick a tick box (from ☐ to ☑) in I/O module object.	1 – Check that channel is not being used by another multi-channel function (e.g. On a DIM the BCD may use 28 channels but only the starting bit will be ticked. BCD with Strobe uses 29 channels. The DPI uses odd channels). 2 – Scroll the horizontal scroll bar to see other functions that may be using channel.
4	Unable to locate Object Settings (e.g. DIM SPI Auto Suppression, Counter Mode, or BCD Strobe).	Some objects (e.g. DIM) have context specific Object Settings columns. Be sure the specific column is selected (highlighted). For example, select the DIM Counter column to display the Object Setting Mode column. Also see the global Object Parameters windowpane.
5	Unable to edit Object Setting name (e.g. CAN_ORT Object Names).	Certain Object Setting fields or cells are auto-generated; therefore, they are un-editable references.

8.2.2 Compile or Download Issues / Solutions

ID	Compile or Download Problem	Solution
1	[NODE] parameter: [FIELDS] requires [MinVALUE,MaxVALUE] in length. E.g. PLC1131_ACT_01 parameter: "LicKey requires [19,40] in length.	1 – Check the Object [FIELDS] value(s) match the required lengths [MinVALUE,MaxVALUE]. E.g. "LicKey" field for the PLC Object requires License Key. 2 – Check the existence of the Object [NODE] and the Node # in the Parameter section matches the hardware. See the appropriate Object Setting or Parameter table for more information.
2	Duplicate node id of [#] found in node [OBJECT]	Check through all the I/O module parameters "Node ID" for a duplicate number within a CFE.
3	On Download, unable to connect to CFE – Status shows "Failed to connect" to LAN or USB.	1 – Check all Ethernet or USB cables in network are connected properly and the network is running properly. Replace or repair cable or network router(s). 2 – Be sure that design has been compiled properly. See Compile and Download section for more information. 3 – Check that the "Current IP Address" and all other the CFE Object Parameters are correct.
4	CFE(s) not rebooted after download or manual reboot.	1 – The download tab was closed prior to the start of a reboot. Wait for message in lower left-hand corner says "… rebooting". 2 – Be sure that the CFE(s) downloaded properly and wait a minimum of 2 minutes after seeing the "Rebooted" Info message.
5	IP address not changed according to CFE Object Parameter Network setting.	Use the Tool pull-down menu item "CFE Information" to see if that IP address is being used. Change IP address and download again.
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8.2.3 Printing and Saving Issues / Solutions

ID	Printing and Saving Problem	Solution
1	The tick marks ☑ do not print.	Check that Print Setup has the General “Print graphics” item ☑ selected.
2	Title, data/time, or page numbers printed.	Check that Print Setup has the Headers/Footers “Title”, “Date/Time”, and/or “Page Numbers” configured appropriately.
3	Must reconfigure the printer settings to my preferences.	Save the print preferences in the Print Setup Preferences tab and load the appropriate printer preferences.
4	Attempting to save to see “Please insert a disk into drive _”	Drive device or network location not available. Check that the network up and running or drive available and not read-only.
5	WDS requests to Save after saving the project.	Every project is saved for content and for completion (i.e. project has been compiled “checked” for validity). Certain fields are shown to be unchecked and therefore not saved. A specific cell or field may have been entered but not necessarily changed. WDS checks this and assumes a change has been made (this is shown visually by a yellow bar on the left edge of a cell or field).
6	When saving “Wrong File Format” appears.	1 – May be attempting to save a production project using the WDS demonstration version. Projects are not backward compatible to the demonstration version. 2 – Older WDS production or demonstration created version may not be compatible with current version. 3 – The file might not be a WDS project file or may be corrupt.
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8.2.4 External Application (e.g. OpenPCS) Interface Issues / Solutions

ID	External Application Problem	Solution
1	Unable to save different OpenPCS projects within WDS.	Only one PLC1131 object is allowed in a CFE. When WDS saves a project with OpenPCS projects, the OpenPCS in each CFE is saved (1 project per CFE). To create various OpenPCS projects per CFE, use the Project Windowpane right mouse-click context pop-up menu item Import/Export for Application… OpenPCS.
2	The specific WDS I/O points do not appear as External Variables for a OpenPCS project.	During the Download the WDS variable names are optionally passed to the OpenPCS project. Select “Yes” when prompted by the POE Configuration dialog box to download the WDS name to the External Variables in the OpenPCS source code.
3	External Application data was NOT saved within WebCAN Designer Studio project. E.g. Made change and saved in OpenPCS.	WebCAN Designer Studio project “Save” was not done. Always return to WDS application and explicitly save the project. Changes made in ANY external application is NOT tracked by WDS. For example, source code saved in OpenPCS does not inform WDS that a change has been made. WDS will only ask to save if a change was made in WDS.
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